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DATE: 30 January 2020

I.T.L. (PRODUCT TESTING) LTD.

FCC Radio Test Report

for

Corning Optical Communication Wireless

Equipment under test:

Building Wireless System (BWS) v1.0

Low Power Radio (LPR)
(PCS Section)

Tested by: _____
I. Kaganovich

Approved by: _____
D. Shidlowsky

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Measurement/Technical Report for

Corning Optical Communication Wireless

Building Wireless System (BWS) v1.0

Low Power Radio (LPR)

FCC ID: OJF1LPR

This report concerns:	Original Grant: X Class II change: Class I change:
Equipment type:	Part 20 Industrial Booster (CMRS)
Limits used:	47CFR Parts 2; 24

Measurement procedure used is KDB 935210 D05 v01r03 April 2019 and ANSI IEEE C63.26-2015
Substitution Method used as in ANSI TIA-603-E-2016

Application for Certification prepared by:

R. Pinchuck
ITL (Product Testing) Ltd.
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Israel
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Applicant for this device:
(different from "prepared by")

Isaac Nissan
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e-mail: NissanI@corning.com

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1. General Information

1.1 Administrative Information

Manufacturer:	Corning Optical Communication Wireless
Manufacturer's Address:	8253 1st Street Vienna, VA 22182 U.S.A. Tel: +1-703-855-1773
Manufacturer's Representative:	Isaac Nissan
Equipment Under Test (E.U.T):	Building Wireless System (BWS) v1.0
Equipment Model No.:	Low Power Radio (LPR)
Equipment Serial No.:	704A055003
Date of Receipt of E.U.T:	October 3, 2019
Start of Test:	October 3, 2019
End of Test:	December 24, 2019
Test Laboratory Location	I.T.L (Product Testing) Ltd. 1 Batsheva St, Lod, Israel 7116002
Test Specifications:	FCC Parts 2; 24

1.2 List of Accreditations

The EMC laboratory of I.T.L. is accredited by/registered with the following bodies:

1. The American Association for Laboratory Accreditation (A2LA) (U.S.A.), Certificate No. 1152.01.
2. The Federal Communications Commission (FCC) (U.S.A.), FCC Designation Number is IL1005.
3. The Israel Ministry of the Environment (Israel), Registration No. 1104/01.
4. Department of Innovation, Science and Economic Development (ISED) Canada, CAB identifier: IL1002

I.T.L. Product Testing Ltd. is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this test report have been determined in accordance with I.T.L.'s terms of accreditation unless stated otherwise in the report.

1.3 Product Description

Corning's BWS™ platform 1.0 is the first fully-digital, end-to-end in-building cellular solution, for medium size venues.
Corning's Low Power Radio (LPR) units are the end-point antennas connected by optical cable to the BWS system Digital Router Unit (DRU) (distribution/routing of RF samples via CPRI stream), and to the system Power Supply Unit (PSU) for power.
LPR is the first release of Corning's fully-digital radio remote unit, providing plug-and-play, cost-effective processing, minimizing power loss and noise.

1.4 Test Methodology

Both conducted and radiated testing were performed according to the procedures in KDB 935210 D05 v01r03 April 2019 and ANSI/TIA-603-E-2016. Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 Test Facility

Both conducted and radiated emissions tests were performed at I.T.L.'s testing facility in Lod, Israel. I.T.L.'s EMC Laboratory is accredited by A2LA, certificate No. 1152.01 and its FCC Designation Number is IL1005.

1.6 Measurement Uncertainty

Conducted Emission
Conducted Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4)
0.15 – 30 MHz:
Expanded Uncertainty (95% Confidence, K=2):
± 3.44 dB

Radiated Emission

Radiated Emission (CISPR 11, EN 55011, CISPR 22, EN 55022, ANSI C63.4) for open site:
30-1000MHz:
Expanded Uncertainty (95% Confidence, K=2):
± 4.96 dB

1 GHz to 6 GHz
Expanded Uncertainty (95% Confidence, K=2):
±5.19 dB

>6 GHz
Expanded Uncertainty (95% Confidence, K=2):
±5.51 dB

2. System Test Configuration

2.1 Justification

2.1.1 The test setup was configured to closely resemble the standard installation.
2.1.2 The EUT consists of the LPR (Low-Power Remote Module) which is connected with the head-end ICRAN equipment (BBU and DRU) using fiber optic cable.
2.1.3 The RF source signals are represented in the setup by BBU unit.
2.1.4 An "Exercise" SW on the computer was used to enable/disable transmission of the EUT, while the EUT output was connected to the spectrum analyzer.
2.1.5 The system was tested under maximum gain conditions.
2.1.6 Only peak power testing was done on the both ports, all other testing was performed 1 port (see customer declaration on following page regarding the identical ports).
2.1.7 Testing was performed on the following configuration:

Frequency Range (MHz)		
Service/Band	**Downlink (DL)**	**Technology**
PCS	1930-1995	LTE

2.2 EUT Exercise Software

vHCM SW ver. 1.0 used for commands delivery. These commands are used to enable/disable the EUT transmission.
EUT Embedded SW versions are:
DRU ver dru_d719_10_25
LPR ver LPR_D803_01.63

2.3 Special Accessories

No special accessories were needed in order to achieve compliance.

2.4 Equipment Modifications

No modifications were necessary in order to achieve compliance.

CORNING

Declaration

Date: December 25, 2019

RE: Corning Optical Communication Wireless
P/N: LPR-3C-2A2P2W-10
FCC ID: OJF1LPR

I hereby declare that the MIMO stream 1 and MIMO stream 2 of the LPR-3C-2A2P2W-10 have the identical RF chain including antenna gain of 2dBi.

Authorized Signature:

Printed Name: Isaac Nissan

2.5 Configuration of Tested System

Product Name	Building Wireless System (BWS) v1.0
Model Name	Low Power Radio (LPR)
Working voltage	100-240VAC/ 48VDC
Mode of operation	Industrial Booster for PCS band
Modulations	QPSK,16QAM,64QAM
Assigned Frequency Range	1930MHz-1995MHz
Transmit power	~15.0dBm
Antenna Gain	2dBi
DATA rate	N/A
Modulation BW	5MHz, 10MHz; 15MHz; 20MHz
DC Voltage and DC current applied to the final amplifying device	36-60VDC, (nominal voltage 48V/ 2A)

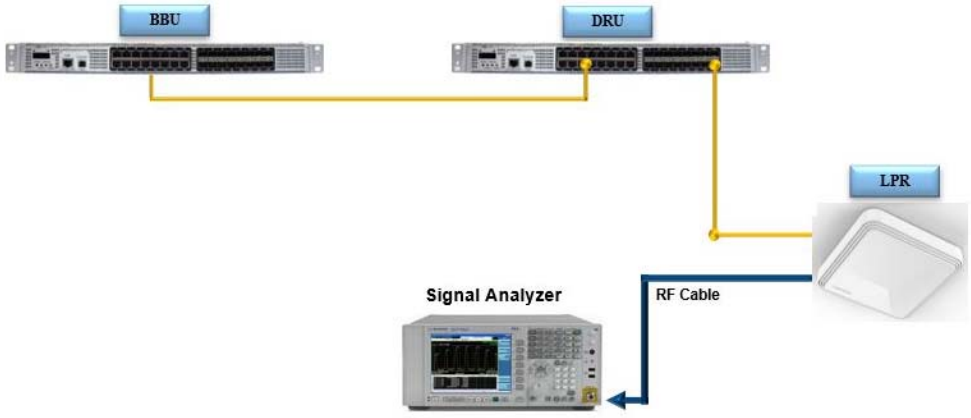

Figure 1. Conducted Test Set-Up

Figure 2. Radiated Test Set-Up

3. Test Set-Up Photos

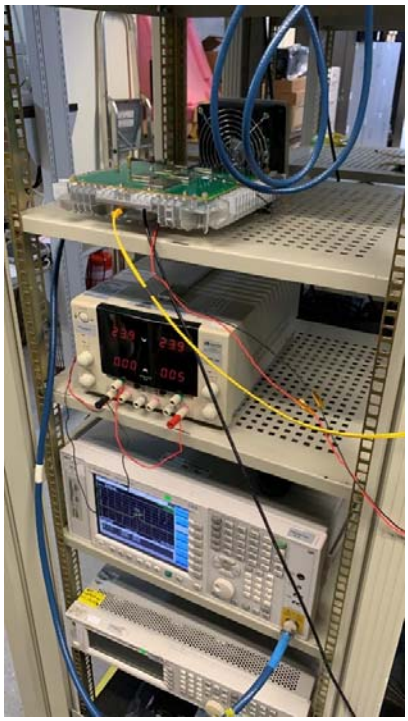

Figure 3. Conducted Test Set-Up

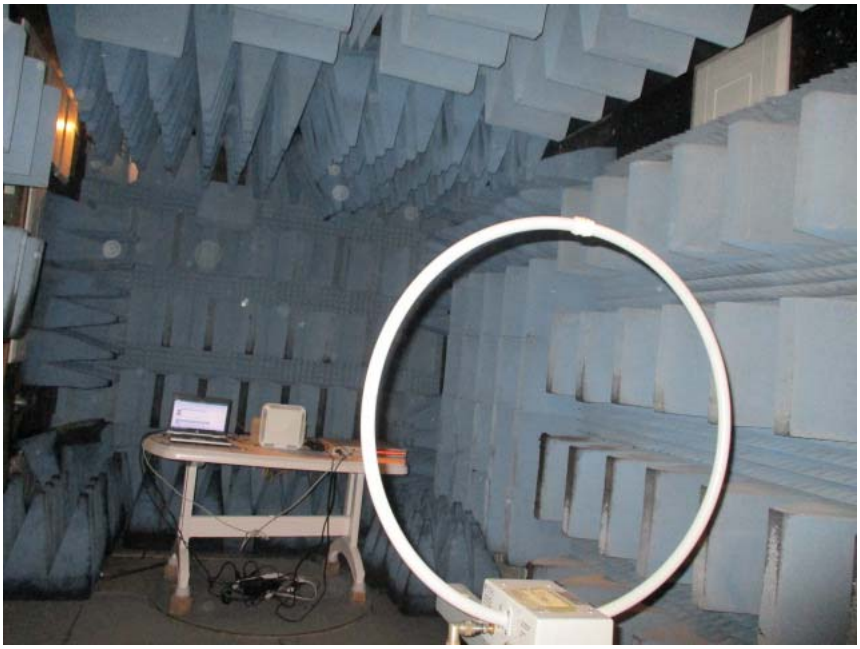

Figure 4. Radiated Emission Test, 0.009-30MHz

Figure 5. Radiated Emission Test, 30-200MHz

Figure 6. Radiated Emission Test, 200-1000MHz

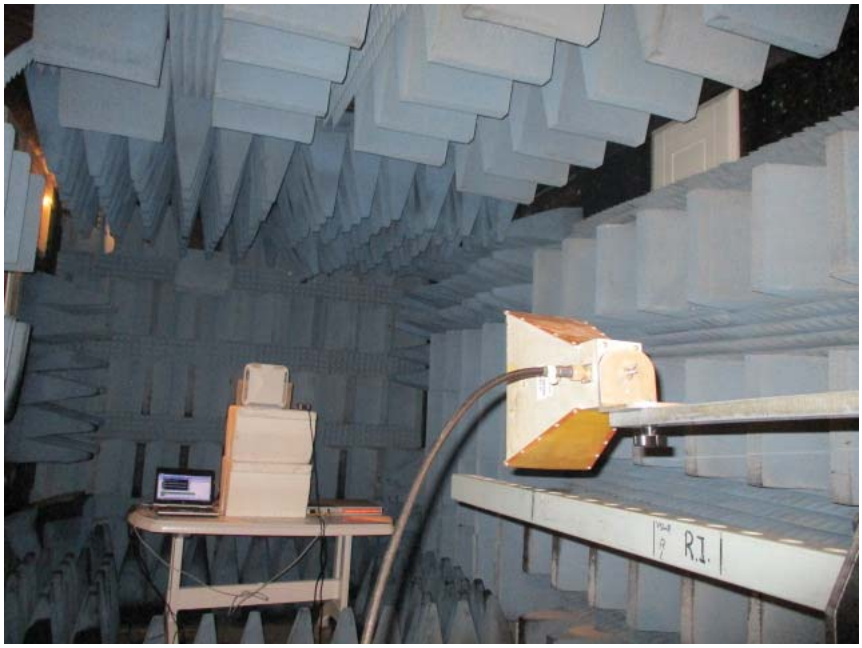

Figure 7. Radiated Emission Test, 1-18GHz

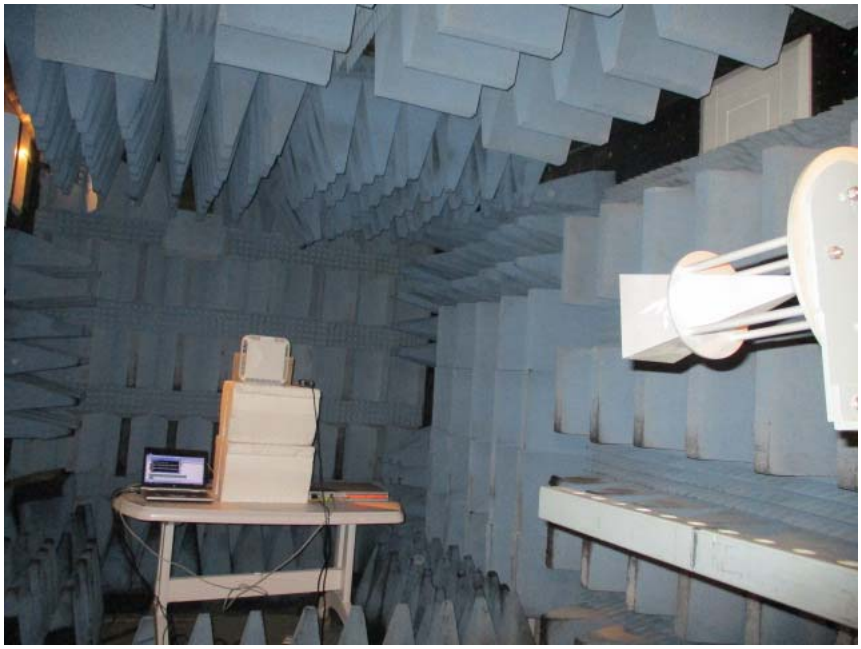

Figure 8. Radiated Emission Test, 18-26.5GHz

4. RF Power Output PCS

4.1 Test Specification

FCC Part 24, Subpart E

4.2 Test Procedure

(Temperature (22°C)/ Humidity (38%RH))

The E.U.T. antenna terminal was connected to the Spectrum Analyzer through an appropriate coaxial cable. Special attention was taken to prevent Spectrum Analyzer RF input overload. The E.U.T. RF outputs were modulated with QPSK, LTE 16QAM and LTE 64QAM.

EIRP was calculated as total power of 2 ports include Antenna Gain of 2dBi.

4.3 Test Limit

Peak Power Output must not exceed 1640 Watts (62.1dBm).

4.4 Test Results

Modulation	Operation Frequency	Port1 Reading	Port1 Reading	Port2 Reading	Port1 Reading	EIRP*	Limit	Margin
	(MHz)	(dBm)	(Watts)	(dBm)	(Watts)	(dBm)	(dBm)	(dB)
QPSK	1932.5	19.7	0.093	20	0.100	24.86	62.1	-37.2
	1962.5	20	0.100	19.9	0.098	24.96	62.1	-37.1
	1992.5	19.9	0.098	20.1	0.102	25.01	62.1	-37.1
16QAM	1932.5	19.7	0.093	20.0	0.100	24.86	62.1	-37.2
	1962.5	20.1	0.102	19.9	0.098	25.01	62.1	-37.1
	1992.5	19.8	0.095	20.2	0.105	25.01	62.1	-37.1
64QAM	1932.5	20.8	0.120	20.1	0.102	25.47	62.1	-36.6
	1962.5	20.1	0.102	19.9	0.098	25.01	62.1	-37.1
	1992.5	20	0.100	20.2	0.105	25.11	62.1	-37.0

Figure 9.RF Power Output, 5MHz BW

Modulation	Operation Frequency	Port1 Reading	Port1 Reading	Port2 Reading	Port1 Reading	EIRP*	Limit	Margin
	(MHz)	(dBm)	(Watts)	(dBm)	(Watts)	(dBm)	(dBm)	(dB)
QPSK	1935.0	19.9	0.098	20.4	0.110	25.17	62.1	-36.9
	1962.5	20	0.100	19.9	0.098	24.96	62.1	-37.1
	1990.0	20	0.100	20.2	0.105	25.11	62.1	-37.0
16QAM	1935.0	20	0.100	20.2	0.105	25.11	62.1	-37.0
	1962.5	20.1	0.102	19.9	0.098	25.01	62.1	-37.1
	1990.0	20	0.100	20.2	0.105	25.11	62.1	-37.0
64QAM	1935.0	20	0.100	20.2	0.105	25.11	62.1	-37.0
	1962.5	20.1	0.102	19.9	0.098	25.01	62.1	-37.1
	1990.0	20	0.100	20.2	0.105	25.11	62.1	-37.0

Figure 10. RF Power Output, 10MHz BW

Modulation	Operation Frequency	Port1 Reading	Port1 Reading	Port2 Reading	Port1 Reading	EIRP*	Limit	Margin
	(MHz)	(dBm)	(Watts)	(dBm)	(Watts)	(dBm)	(dBm)	(dB)
QPSK	1937.5	20.2	0.105	20.4	0.110	25.31	62.1	-36.8
	1962.5	20.1	0.102	20	0.100	25.06	62.1	-37.0
	1987.5	20	0.100	20.3	0.107	25.16	62.1	-36.9
16QAM	1937.5	20.3	0.107	20.4	0.110	25.36	62.1	-36.7
	1962.5	20.2	0.105	20	0.100	25.11	62.1	-37.0
	1987.5	20.2	0.105	20.3	0.107	25.26	62.1	-36.8
64QAM	1937.5	20.3	0.107	20.4	0.110	25.36	62.1	-36.7
	1962.5	20.2	0.105	20	0.100	25.11	62.1	-37.0
	1987.5	20.2	0.105	20.3	0.107	25.26	62.1	-36.8

Figure 11. RF Power Output, 15MHz BW

Modulation	Operation Frequency	Port1 Reading	Port1 Reading	Port2 Reading	Port1 Reading	EIRP*	Limit	Margin
	(MHz)	(dBm)	(Watts)	(dBm)	(Watts)	(dBm)	(dBm)	(dB)
QPSK	1940.0	20.4	0.110	20.6	0.115	25.51	62.1	-36.6
	1962.5	20.2	0.105	20	0.100	25.11	62.1	-37.0
	1985.0	20.1	0.102	20.3	0.107	25.21	62.1	-36.9
16QAM	1940.0	20.5	0.112	20.6	0.115	25.56	62.1	-36.5
	1962.5	20.3	0.107	20	0.100	25.16	62.1	-36.9
	1985.0	20.2	0.105	20.3	0.107	25.26	62.1	-36.8
64QAM	1940.0	20.5	0.112	20.6	0.115	25.56	62.1	-36.5
	1962.5	20.2	0.105	20	0.100	25.11	62.1	-37.0
	1985.0	20.2	0.105	20.3	0.107	25.26	62.1	-36.8

Figure 12. RF Power Output, 20MHz BW

*Note – EIRP was calculated by adding both Port readings in W, then converting to dBm and adding the antenna gain.

JUDGEMENT: Passed

See additional information in *Figure 13* to *Figure 84.*

Antenna PORT	1
Modulation	64QAM

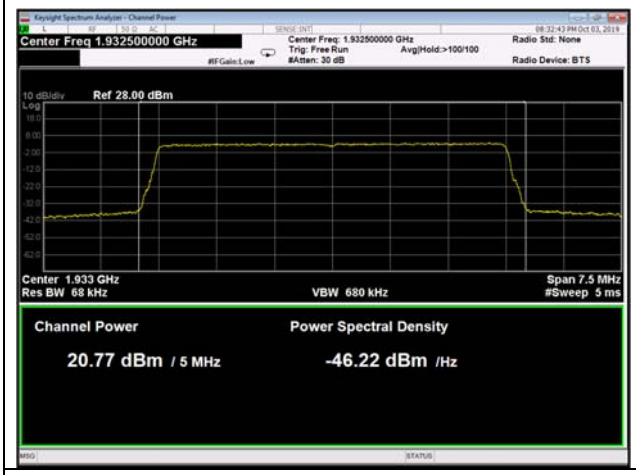

Figure 13 5MHz BW, 1932.5MHz

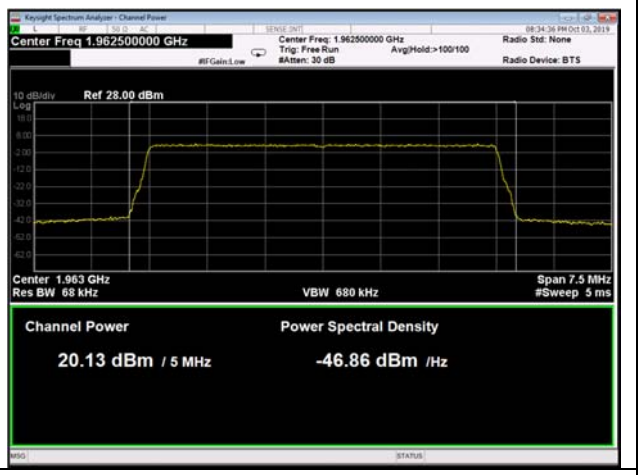

Figure 14 5MHz BW, 1962.5MHz

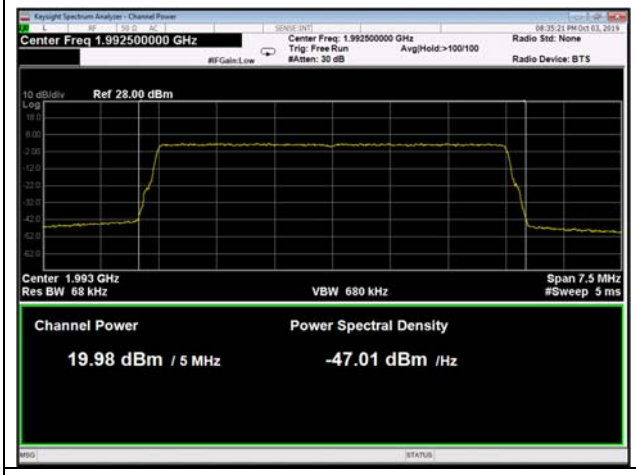

Figure 15 5MHz BW, 1992.5MHz

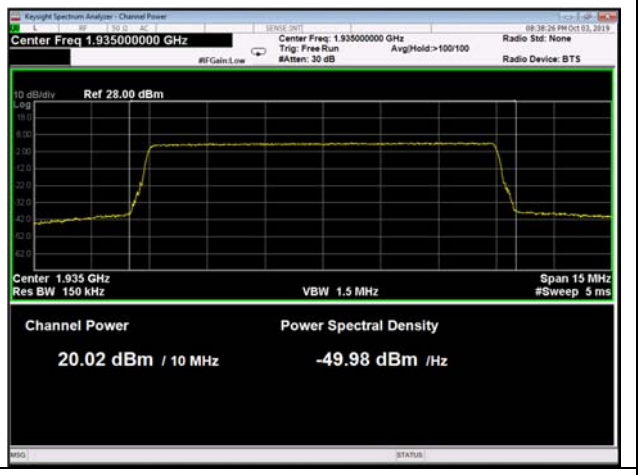

Figure 16 10MHz BW, 1935MHZ

Antenna PORT	1
Modulation	64QAM

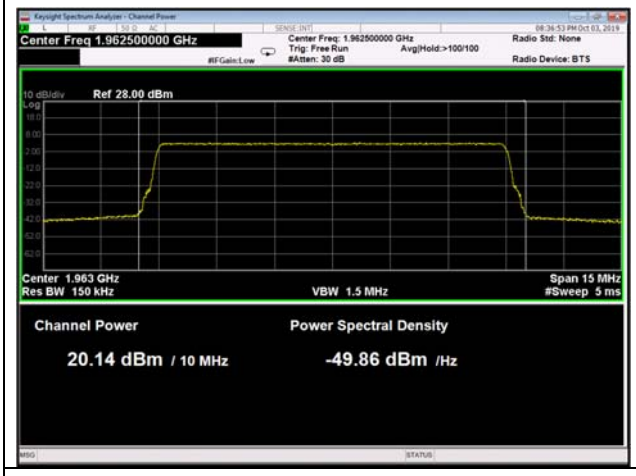

Figure 17 10MHz BW, 1962.5MHz

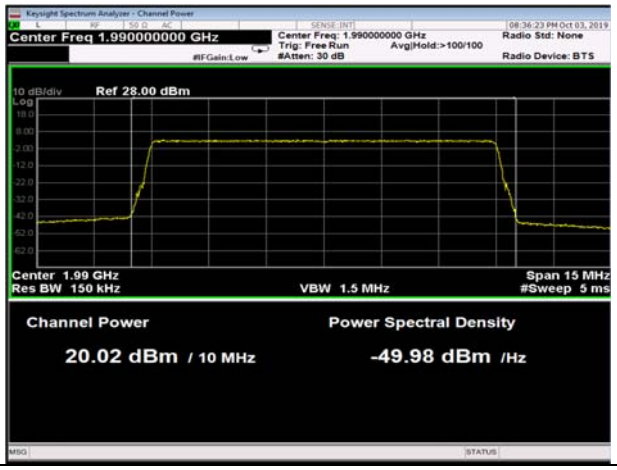

Figure 18 10MHz BW, 1990MHz

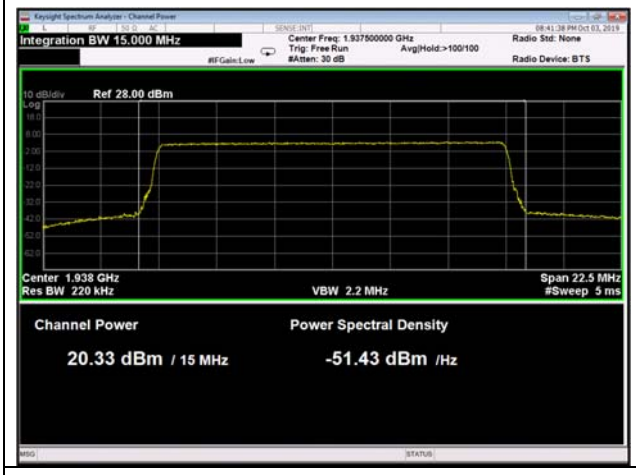

Figure 19 15MHz BW, 1937.5MHz

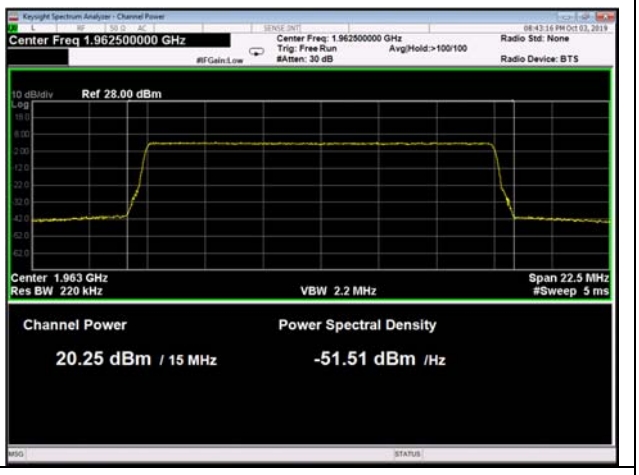

Figure 20 15MHz BW, 1962.5MHz

Antenna PORT	1
Modulation	64QAM

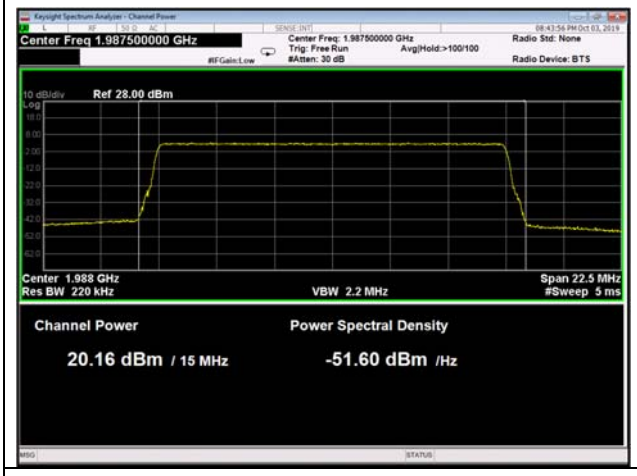

Figure 21 15MHz BW, 1987.5MHz

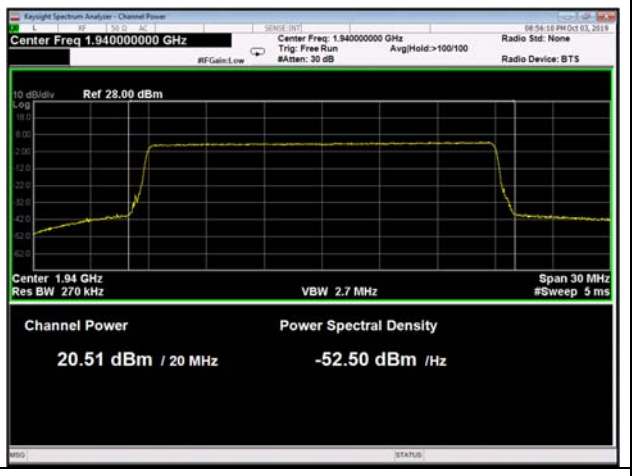

Figure 22 20MHz BW, 1940MHz

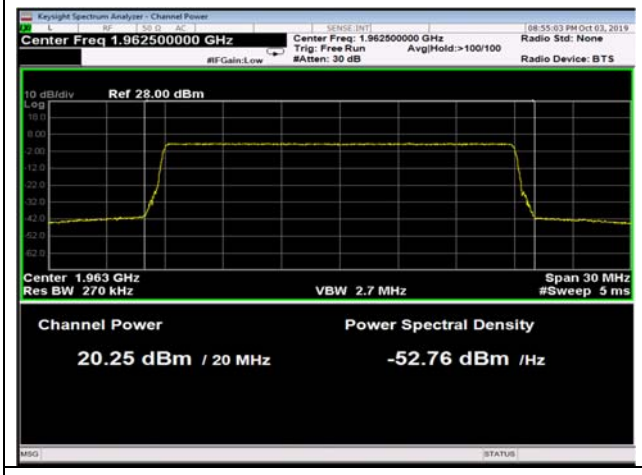

Figure 23 20MHz BW, 1962.5MHz

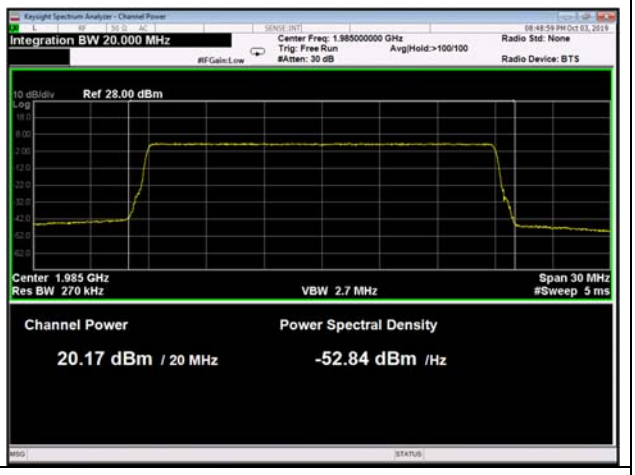

Figure 24 20MHz BW, 1985MHz

Antenna PORT	1
Modulation	16QAM

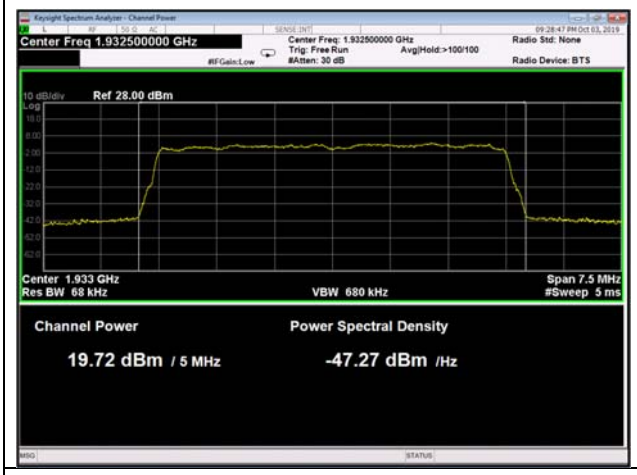

Figure 25 5MHz BW, 1932.5MHz

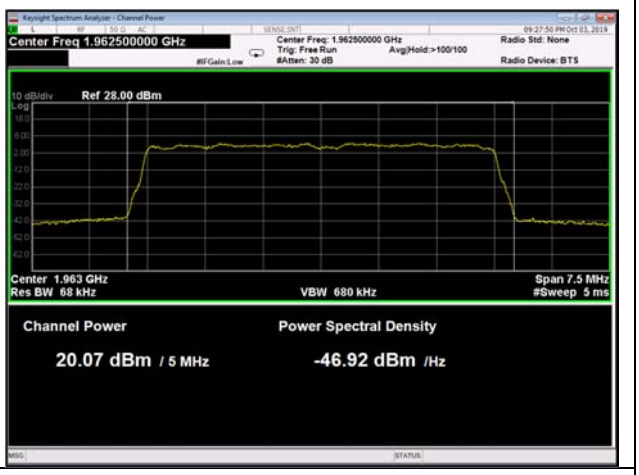

Figure 26 5MHz BW, 1962.5MHz

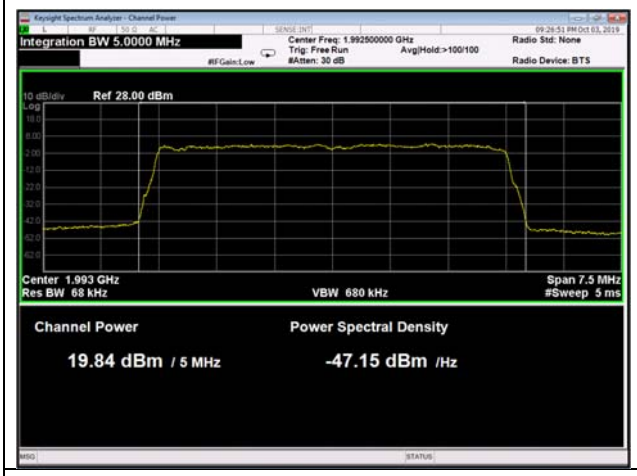

Figure 27 5MHz BW, 1992.5MHz

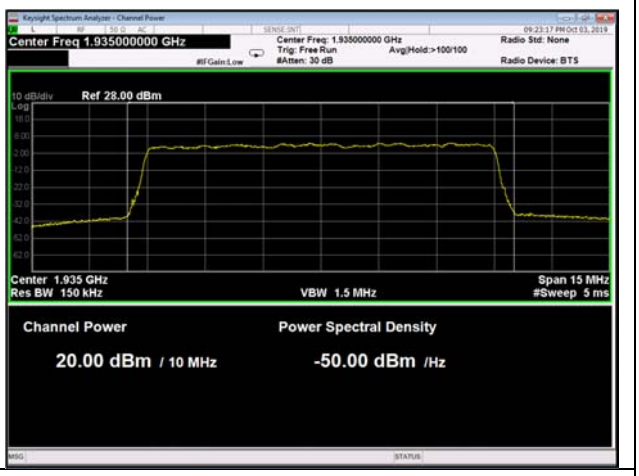

Figure 28 10MHz BW, 1935MHZ

Antenna PORT	1
Modulation	16QAM

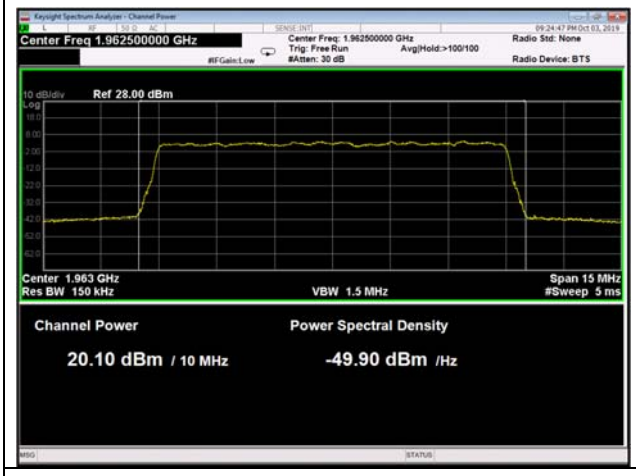

Figure 29 10MHz BW, 1962.5MHz

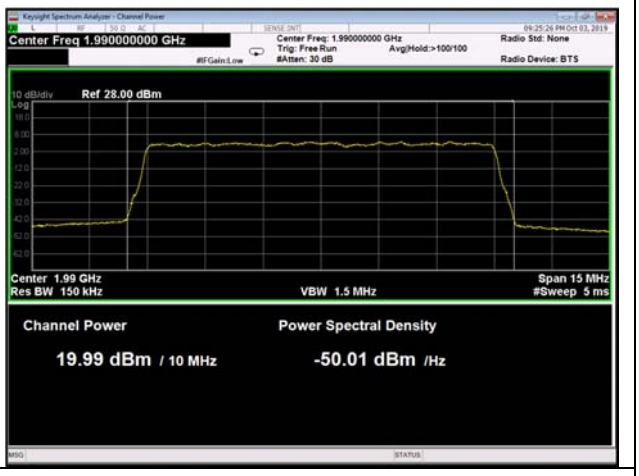

Figure 30 10MHz BW, 1990MHz

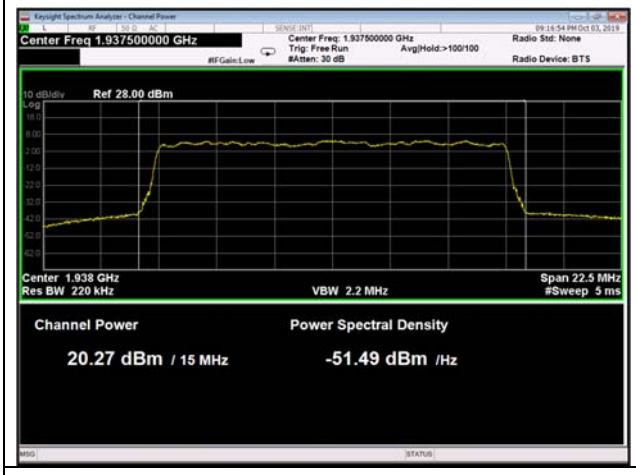

Figure 31 15MHz BW, 1937.5MHz

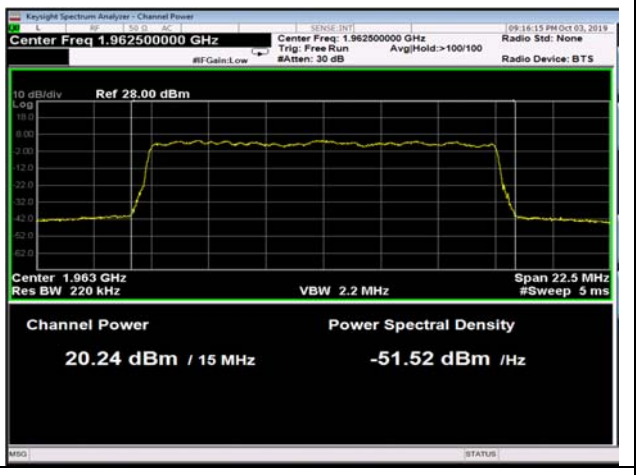

Figure 32 15MHz BW, 1962.5MHz

Antenna PORT	1
Modulation	16QAM

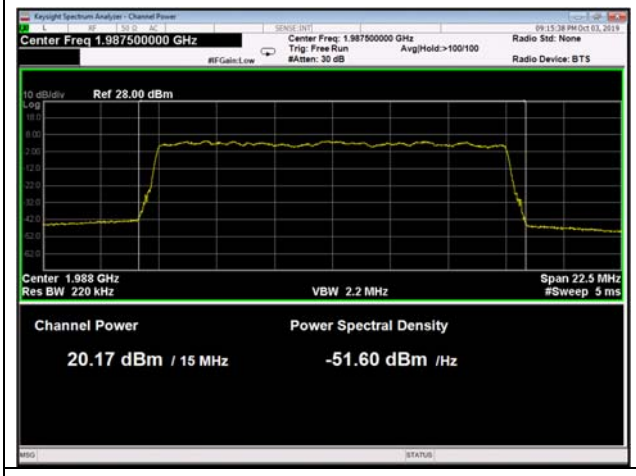

Figure 33 15MHz BW, 1987.5MHz

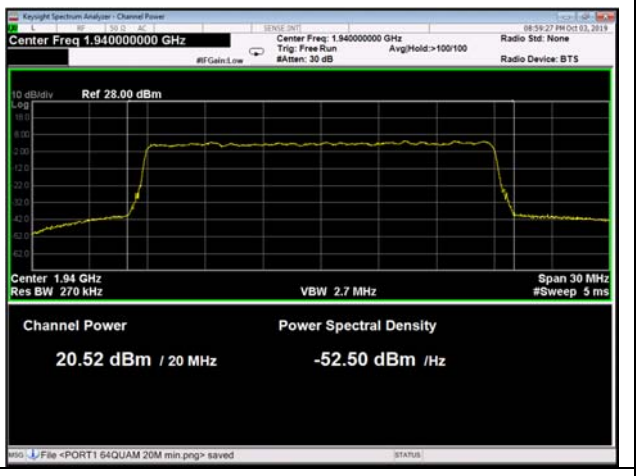

Figure 34 20MHz BW, 1940MHz

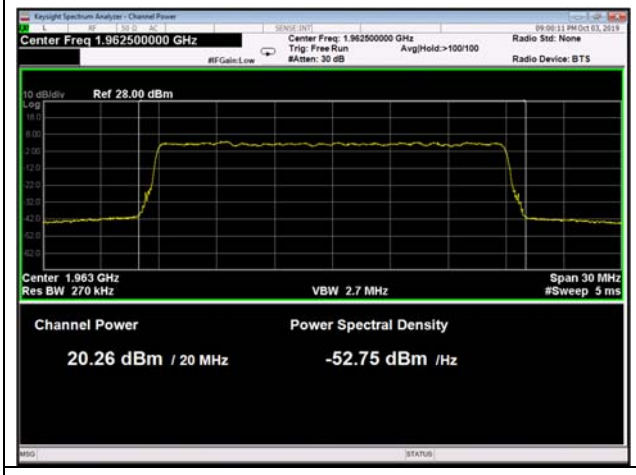

Figure 35 20MHz BW, 1962.5MHz

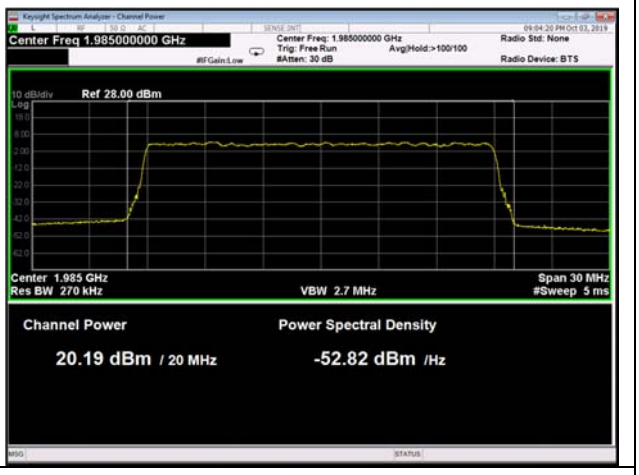

Figure 36 20MHz BW, 1985MHz

Antenna PORT	1
Modulation	QPSK

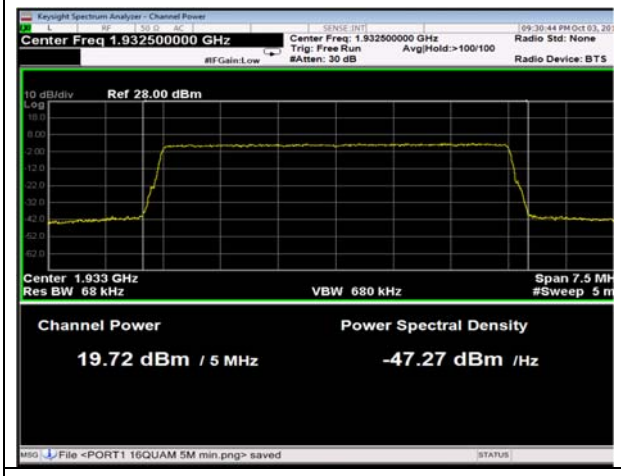

Figure 37 5MHz BW, 1932.5MHz

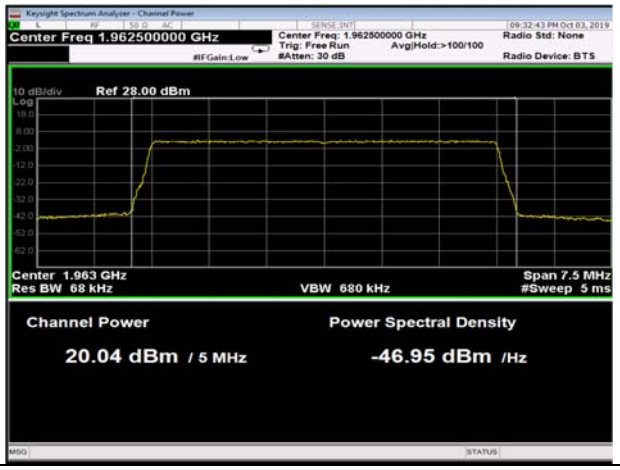

Figure 38 5MHz BW, 1962.5MHz

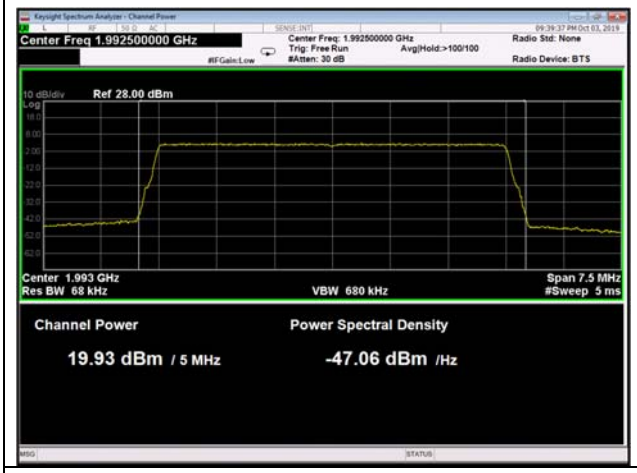

Figure 39 5MHz BW, 1992.5MHz

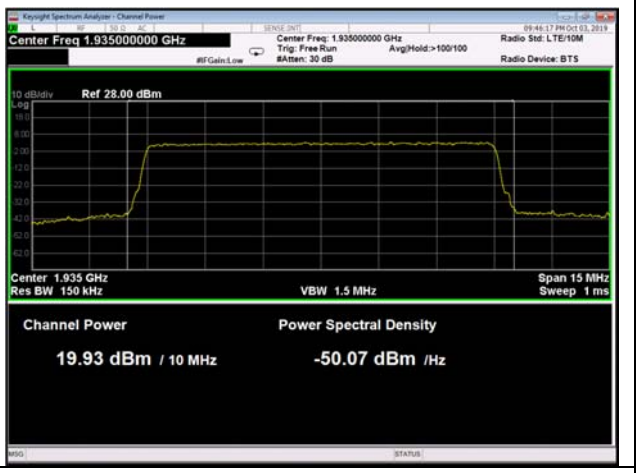

Figure 40 10MHz BW, 1935MHZ

Antenna PORT	1
Modulation	QPSK

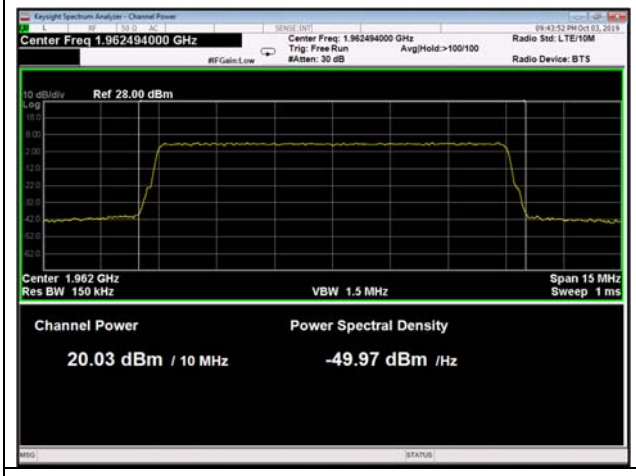

Figure 41 10MHz BW, 1962.5MHz

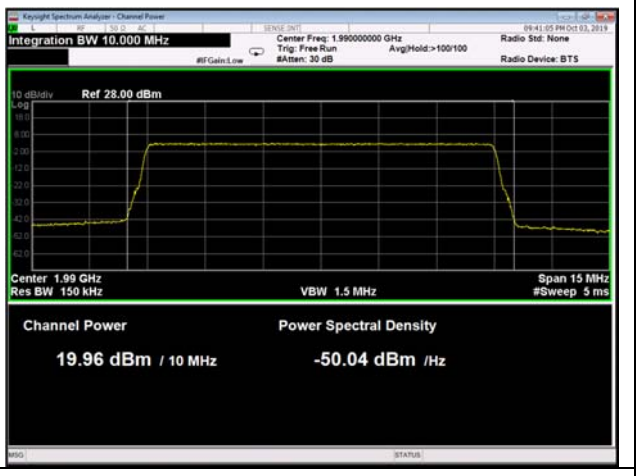

Figure 42 10MHz BW, 1990MHz

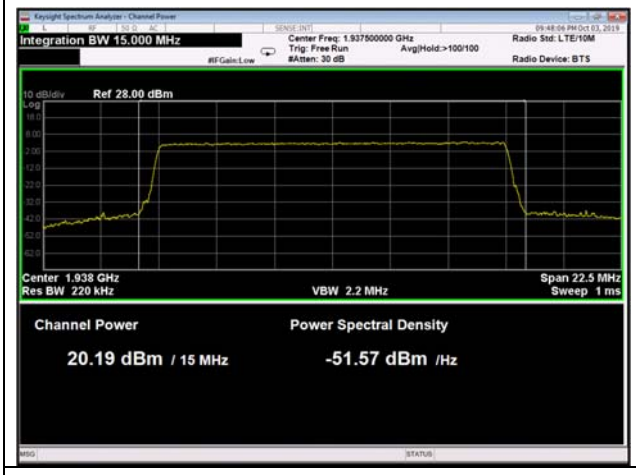

Figure 43 15MHz BW, 1937.5MHz

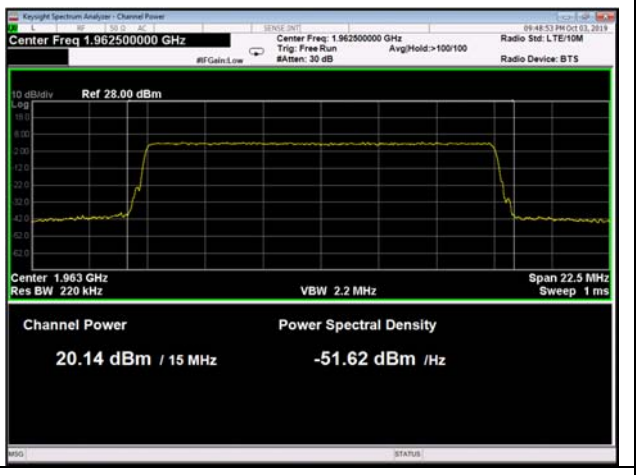

Figure 44 15MHz BW, 1962.5MHz

Antenna PORT	1
Modulation	QPSK

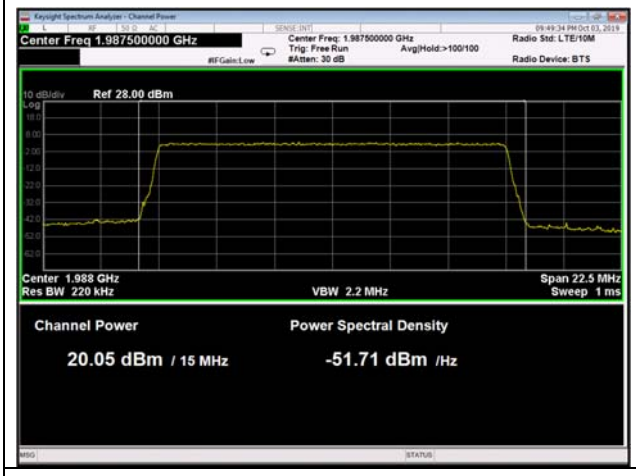

Figure 45 15MHz BW, 1987.5MHz

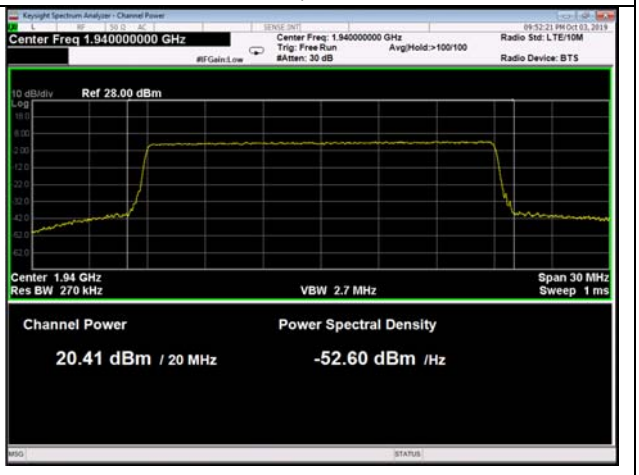

Figure 46 20MHz BW, 1940MHz

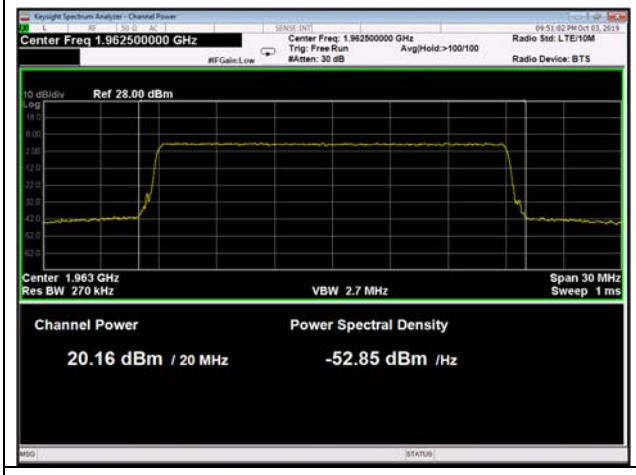

Figure 47 20MHz BW, 1962.5MHz

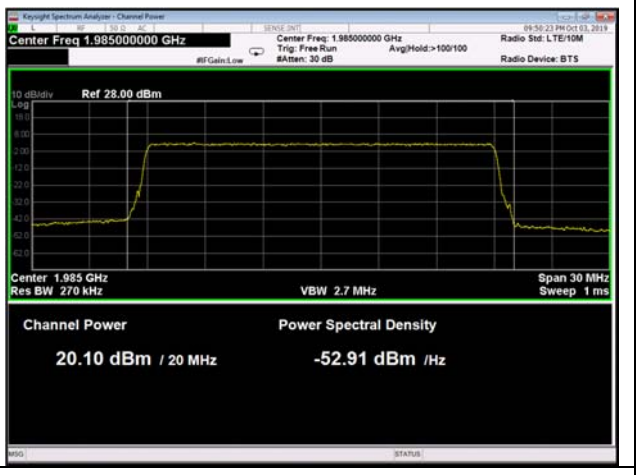

Figure 48 20MHz BW, 1985MHz

Antenna PORT	2
Modulation	64QAM

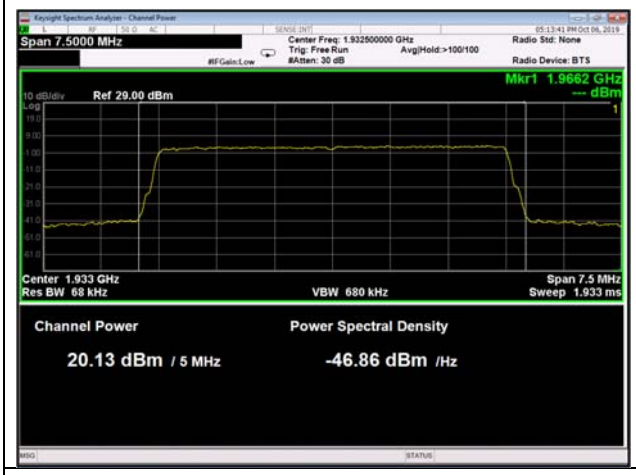

Figure 49 5MHz BW, 1932.5MHz

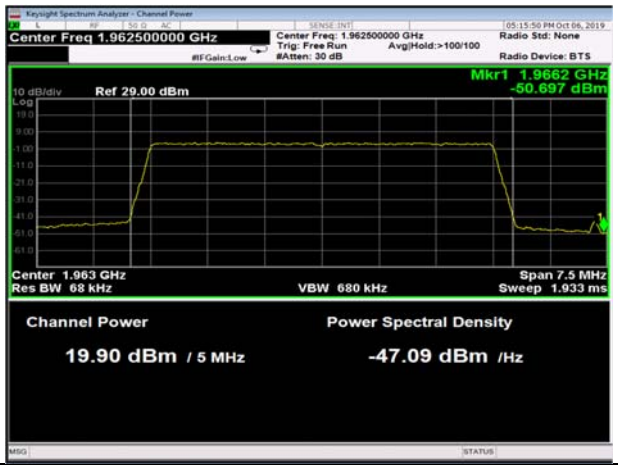

Figure 50 5MHz BW, 1962.5MHz

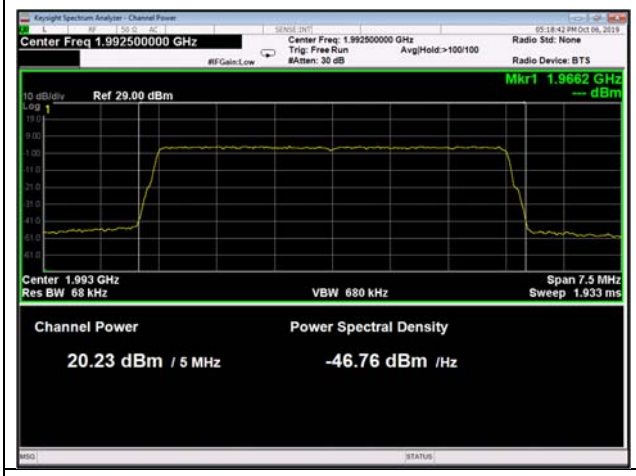

Figure 51 5MHz BW, 1992.5MHz

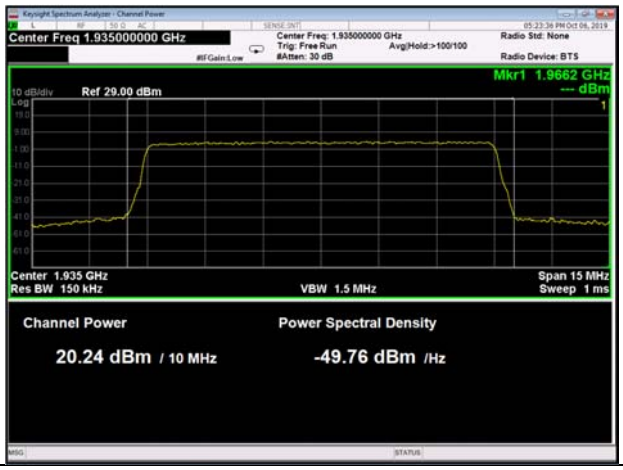

Figure 52 10MHz BW, 1935MHZ

Antenna PORT	2
Modulation	64QAM

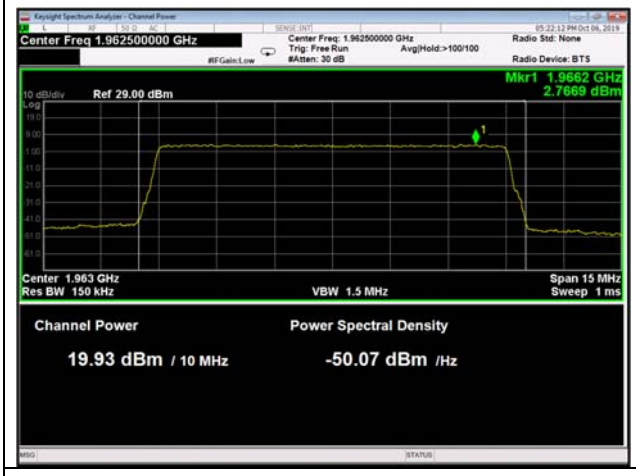

Figure 53 10MHz BW, 1962.5MHz

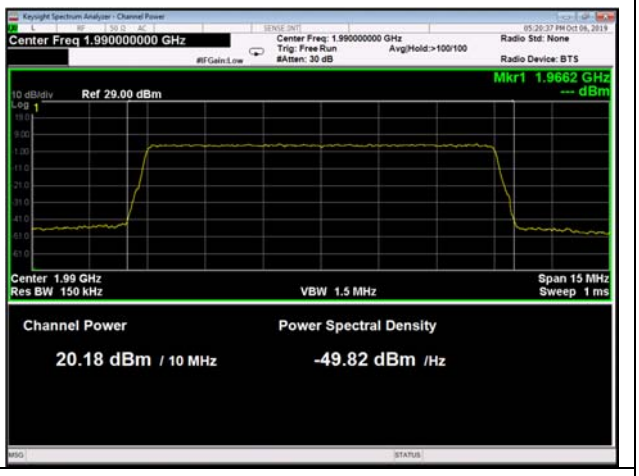

Figure 54 10MHz BW, 1990MHz

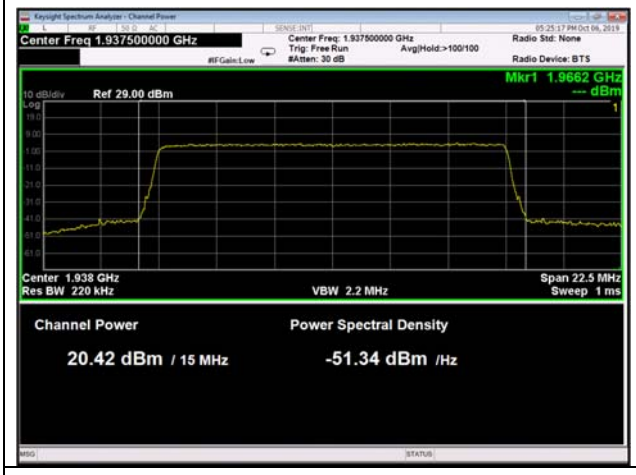

Figure 55 15MHz BW, 1937.5MHz

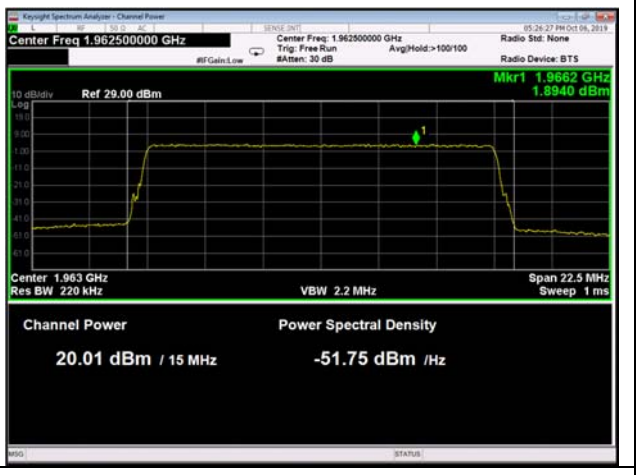

Figure 56 15MHz BW, 1962.5MHz

Antenna PORT	2
Modulation	64QAM

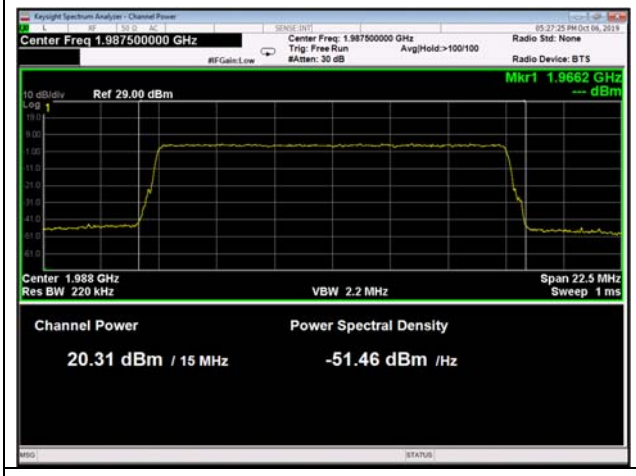

Figure 57 15MHz BW, 1987.5MHz

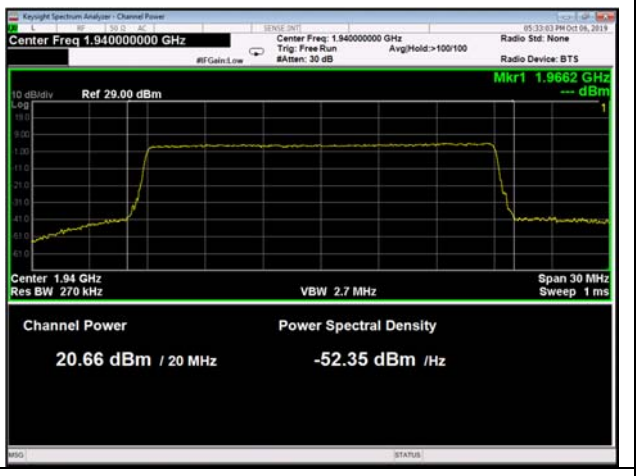

Figure 58 20MHz BW, 1940MHz

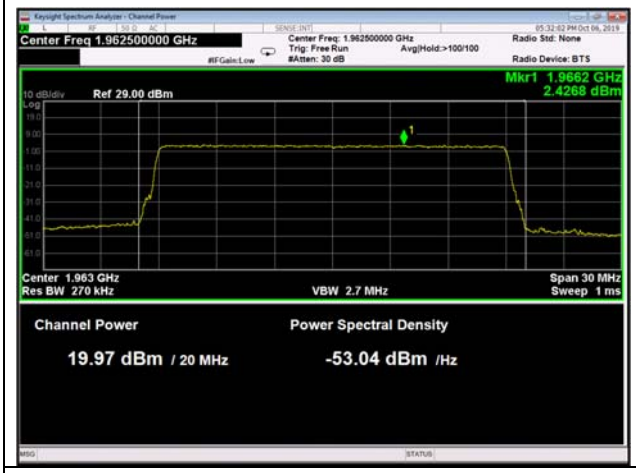

Figure 59 20MHz BW, 1962.5MHz

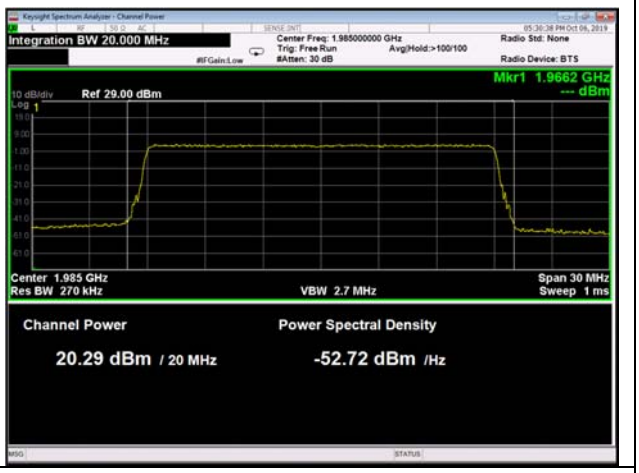

Figure 60 20MHz BW, 1985MHz

Antenna PORT	2
Modulation	16QAM

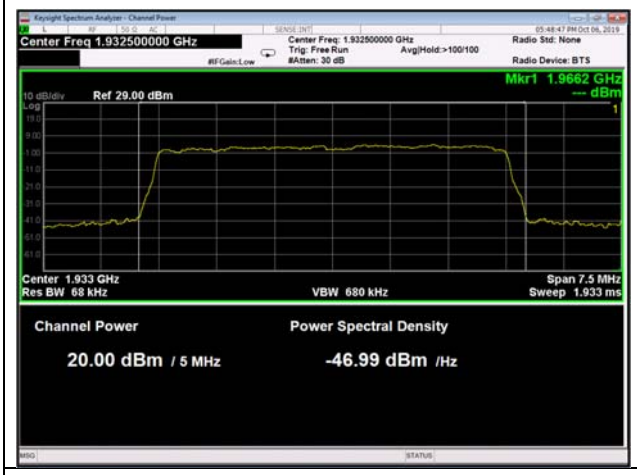

Figure 61 5MHz BW, 1932.5MHz

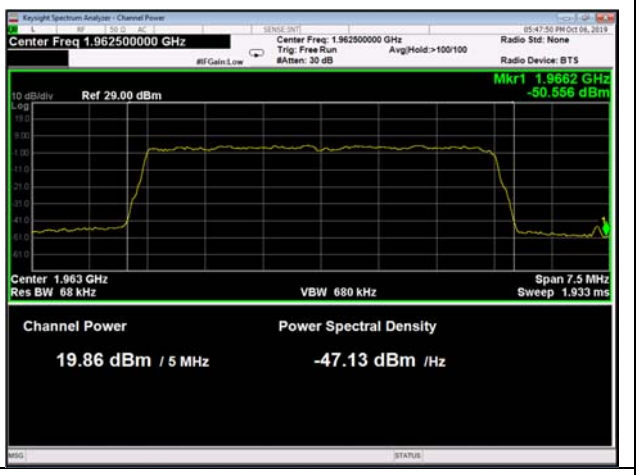

Figure 62 5MHz BW, 1962.5MHz

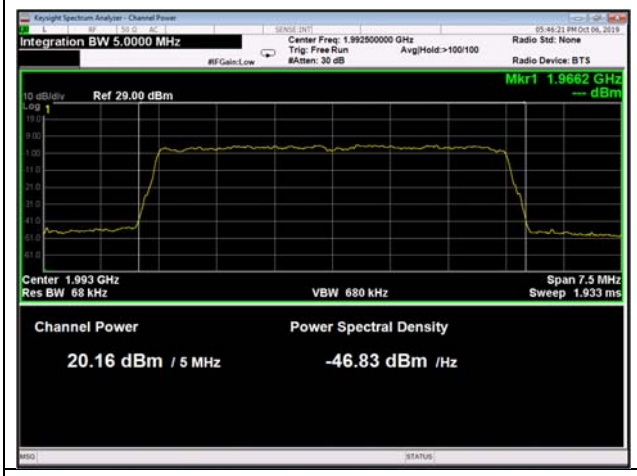

Figure 63 5MHz BW, 1992.5MHz

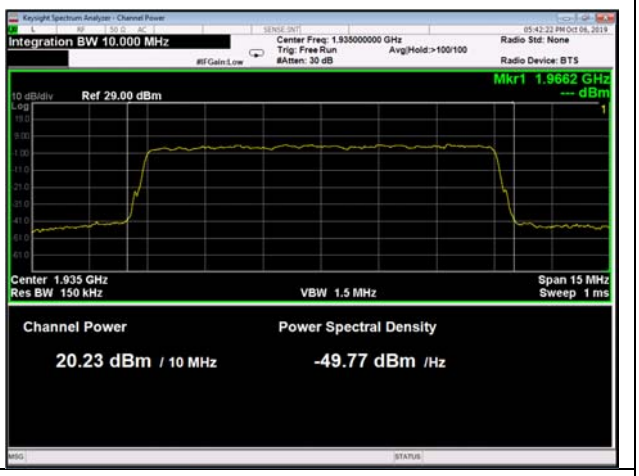

Figure 64 10MHz BW, 1935MHZ

Antenna PORT	2
Modulation	16QAM

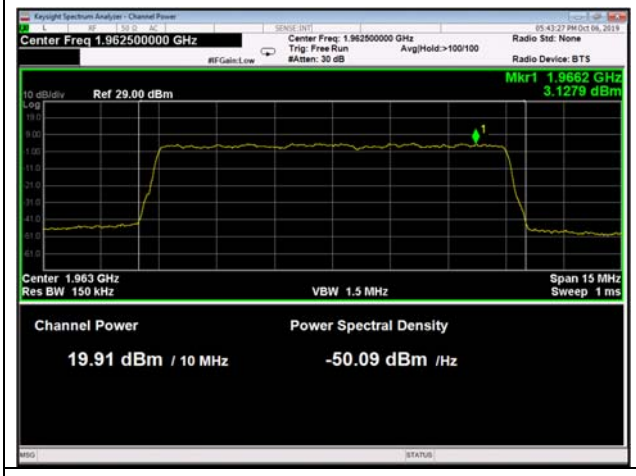

Figure 65 10MHz BW, 1962.5MHz

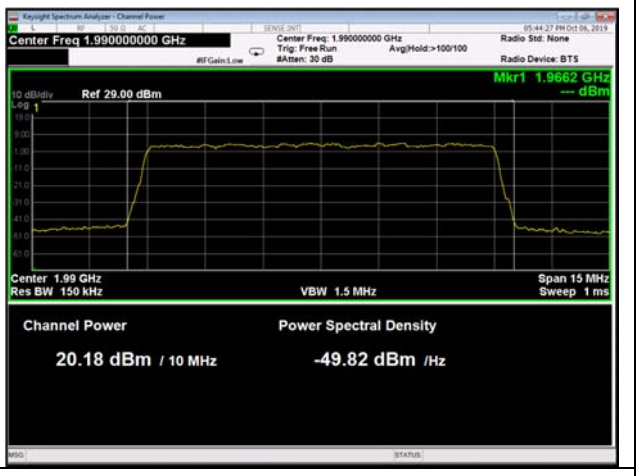

Figure 66 10MHz BW, 1990MHz

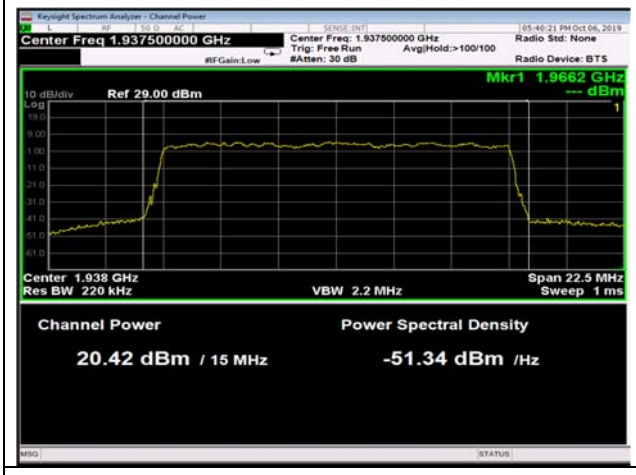

Figure 67 15MHz BW, 1937.5MHz

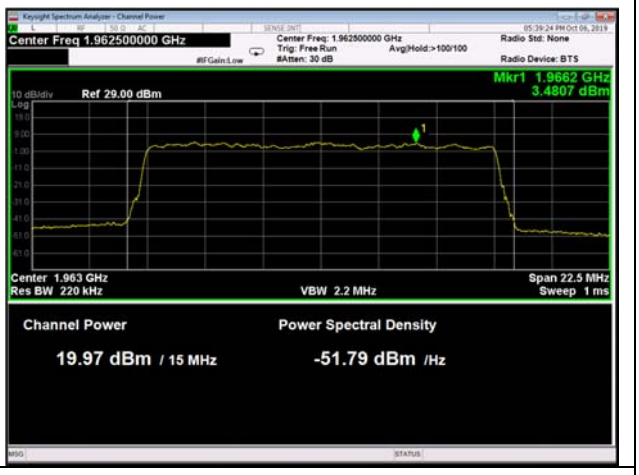

Figure 68 15MHz BW, 1962.5MHz

Antenna PORT	2
Modulation	16QAM

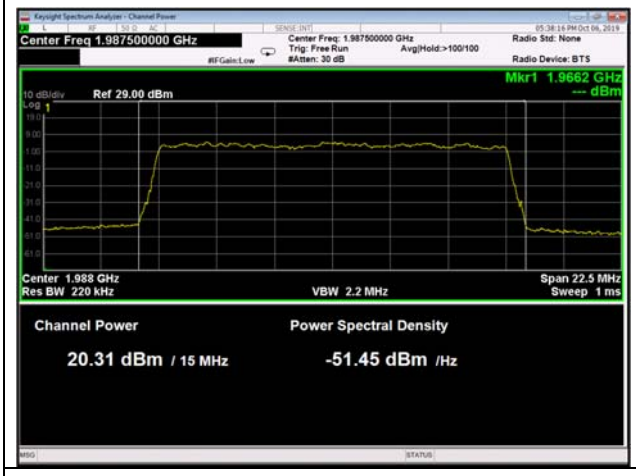

Figure 69 15MHz BW, 1987.5MHz

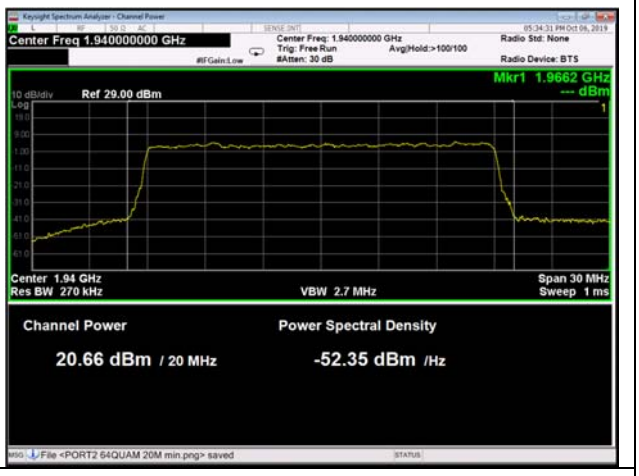

Figure 70 20MHz BW, 1940MHz

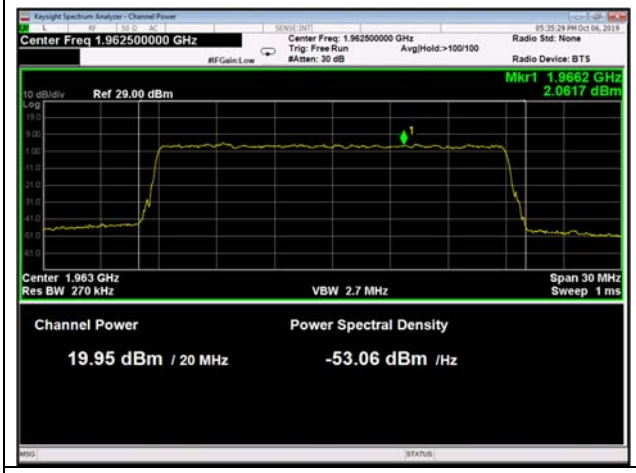

Figure 71 20MHz BW, 1962.5MHz

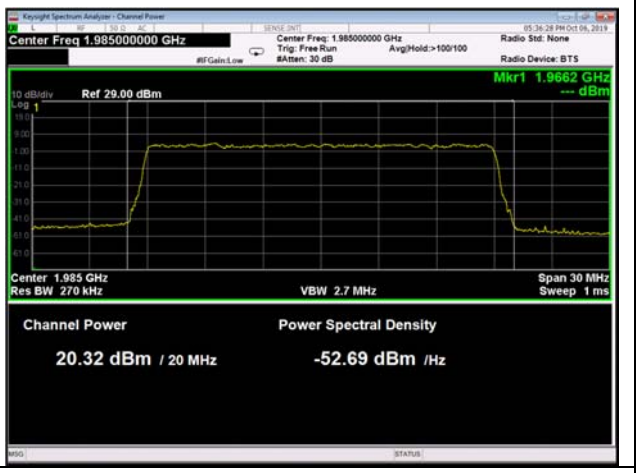

Figure 72 20MHz BW, 1985MHz

Antenna PORT	2
Modulation	QPSK

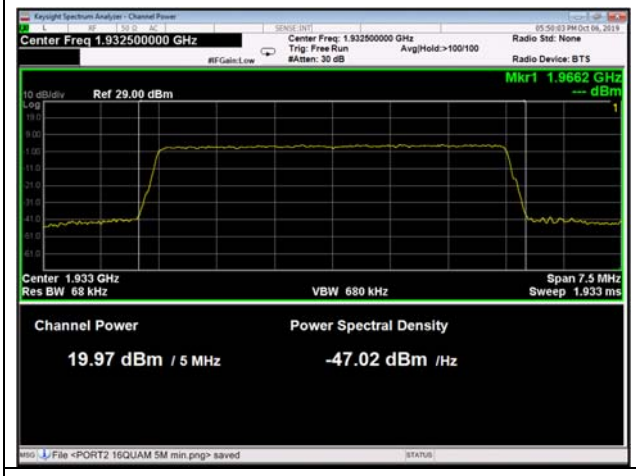

Figure 73 5MHz BW, 1932.5MHz

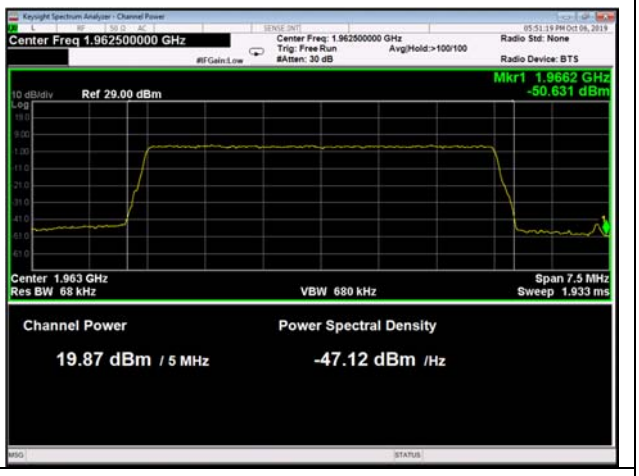

Figure 74 5MHz BW, 1962.5MHz

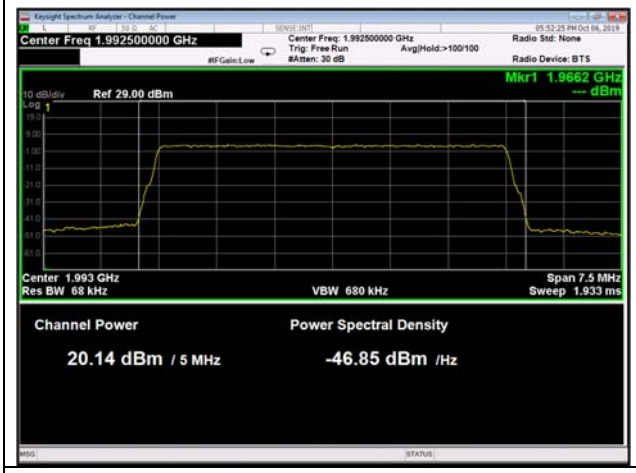

Figure 75 5MHz BW, 1992.5MHz

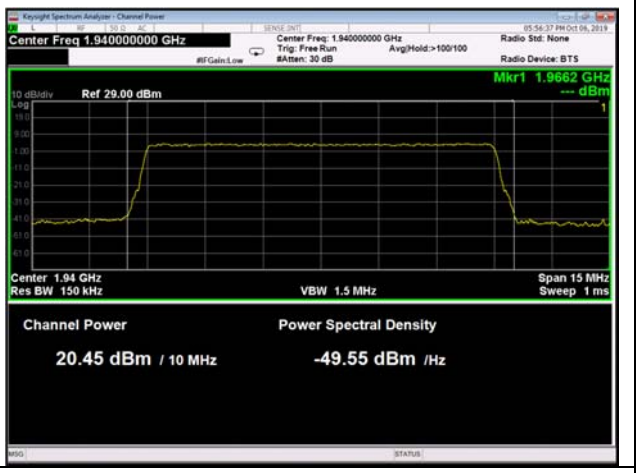

Figure 76 10MHz BW, 1935MHZ

Antenna PORT	2
Modulation	QPSK

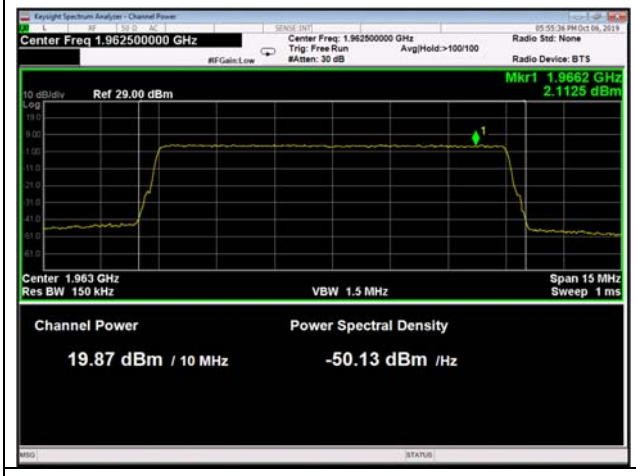

Figure 77 10MHz BW, 1962.5MHz

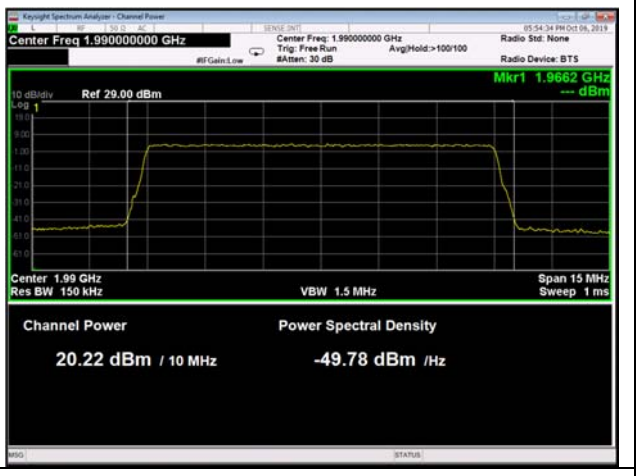

Figure 78 10MHz BW, 1990MHz

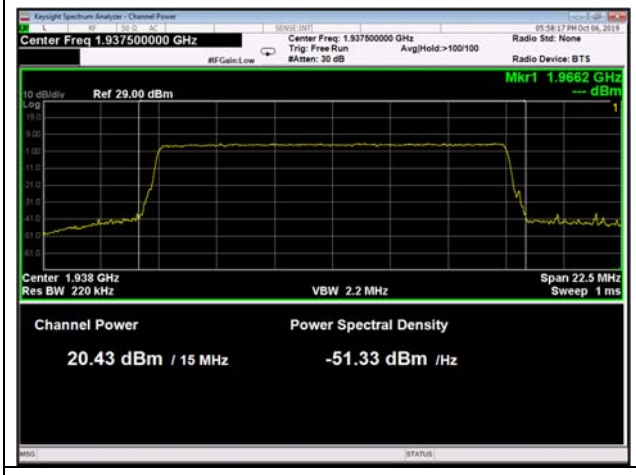

Figure 79 15MHz BW, 1937.5MHz

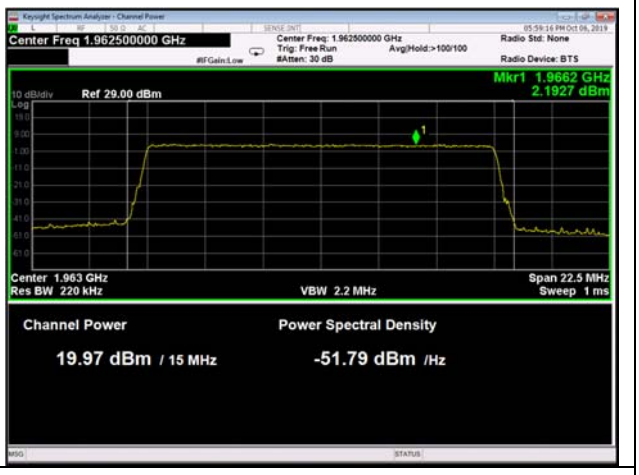

Figure 80 15MHz BW, 1962.5MHz

Antenna PORT	2
Modulation	QPSK

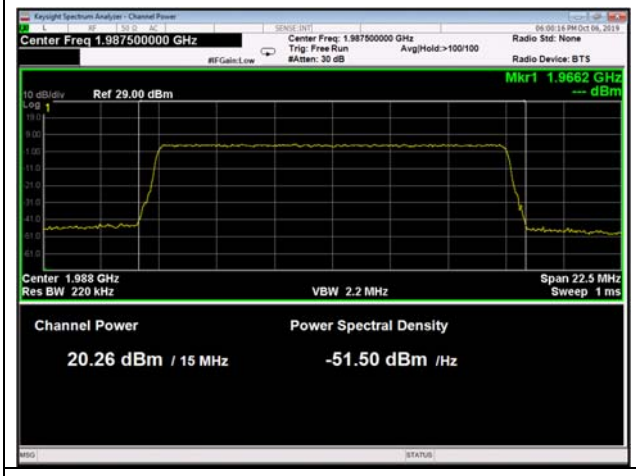

Figure 81 15MHz BW, 1987.5MHz

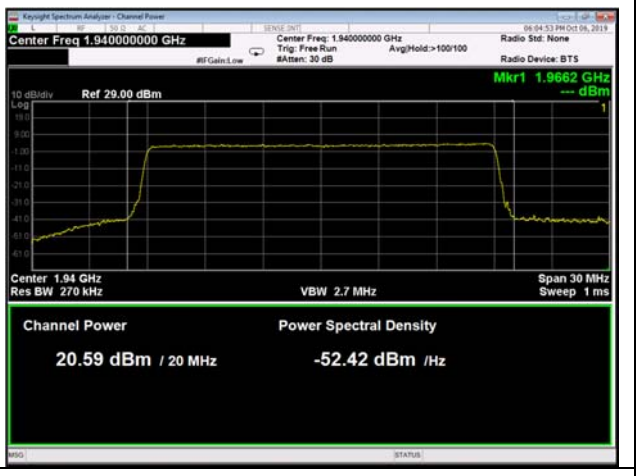

Figure 82 20MHz BW, 1940MHz

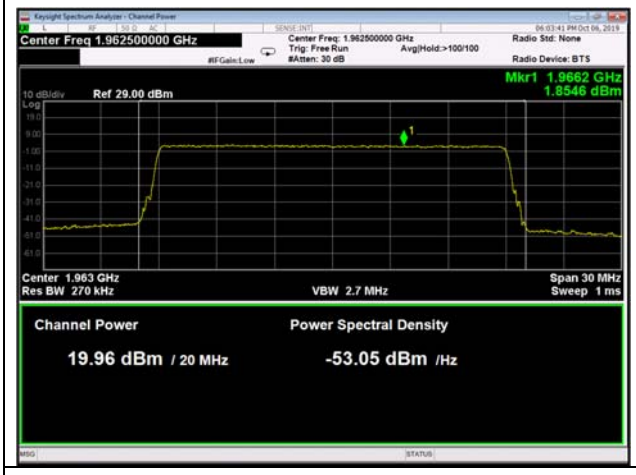

Figure 83 20MHz BW, 1962.5MHz

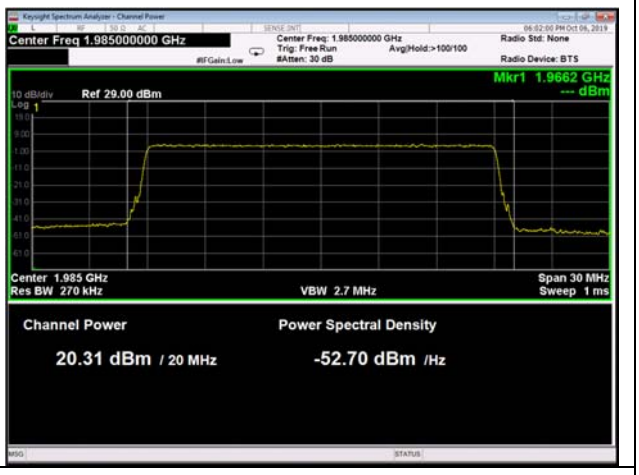

Figure 84 20MHz BW, 1985MHz

4.5 Test Equipment Used; RF Power Output PCS

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
Spectrum Analyzer	Agilent	N9010A	MY52220686	November 28, 2018	November 28, 2020
Vector Signal Generator	VIAVI	MTS 5800	WMNK00716 90263	July 1, 2018	July 1, 2021

Figure 85 Test Equipment Used

5. Occupied Bandwidth PCS

5.1 Test Specification

FCC Part 2, Section 2.1049

5.2 Test Procedure

(Temperature (22°C)/ Humidity (38%RH))
The E.U.T. antenna terminal was connected to the spectrum analyzer through an appropriate coaxial cable (loss=0.8 dB). The spectrum analyzer was set to proper resolution B.W.
OBW function (99%) was employed for this evaluation.

5.3 Test Limit

N/A

5.4 Test Results

Modulation	Operating Frequency [MHz]	Reading [MHz]
QPSK	1932.5	4.5
	1962.5	4.5
	1992.5	4.5
16QAM	1932.5	4.5
	1962.5	4.5
	1992.5	4.5
64QAM	1932.5	4.5
	1962.5	4.5

Figure 86 Occupied Bandwidth PCS, 5MHz BW

Modulation	Operating Frequency [MHz]	Reading [MHz]
QPSK	1935.0	9.0
	1962.5	9.0
	1990.0	9.0
16QAM	1935.0	9.0
	1962.5	9.0
	1990.0	9.0
64QAM	1935.0	9.0
	1962.5	9.0
	1990.0	9.0

Figure 87 Occupied Bandwidth PCS, 10MHz BW

Modulation	Operating Frequency [MHz]	Reading [MHz]
QPSK	1937.5	13.5
	1962.5	13.5
	1987.5	13.5
16QAM	1937.5	13.5
	1962.5	13.5
	1987.5	13.5
64QAM	1937.5	13.5
	1962.5	13.5
	1987.5	13.5

Figure 88 Occupied Bandwidth PCS, 15MHz BW

Modulation	Operating Frequency [MHz]	Reading [MHz]
QPSK	1940.0	18.0
	1962.5	18.0
	1985.0	18.0
16QAM	1940.0	18.0
	1962.5	18.0
	1985.0	18.0
64QAM	1940.0	18.0
	1962.5	18.0
	1985.0	18.0

Figure 89 Occupied Bandwidth PCS, 20MHz BW

JUDGEMENT: Passed

See additional information in *Figure 90* to *Figure 125.*

Antenna PORT	1
Modulation	64QAM

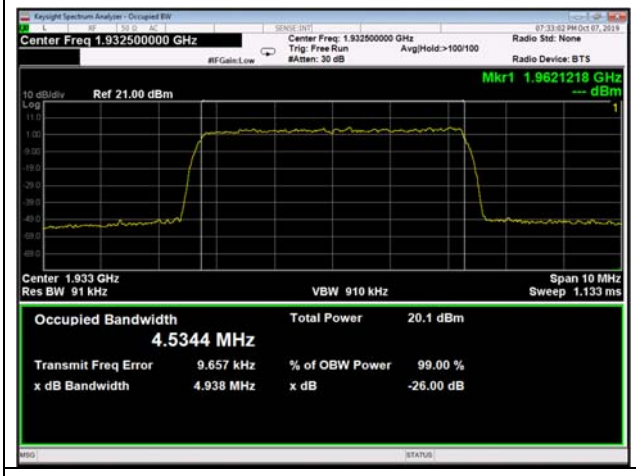

Figure 90 5MHz BW, 1932.5MHz

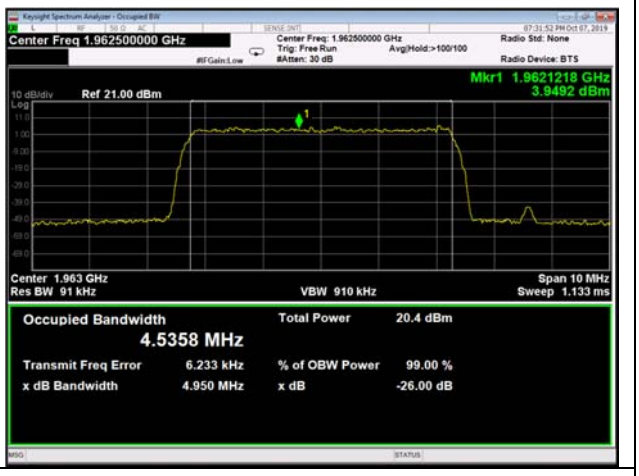

Figure 91 5MHz BW, 1962.5MHz

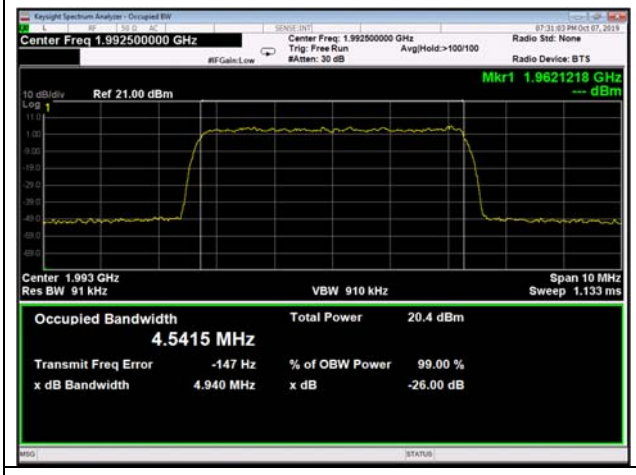

Figure 92 5MHz BW, 1992.5MHz

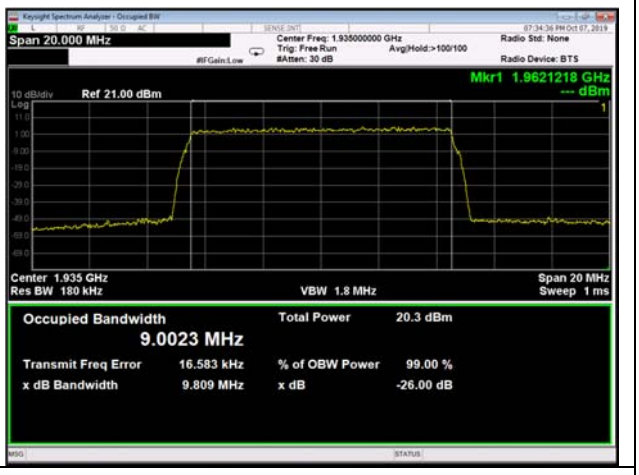

Figure 93 10MHz BW, 1935MHZ

Antenna PORT	1
Modulation	64QAM

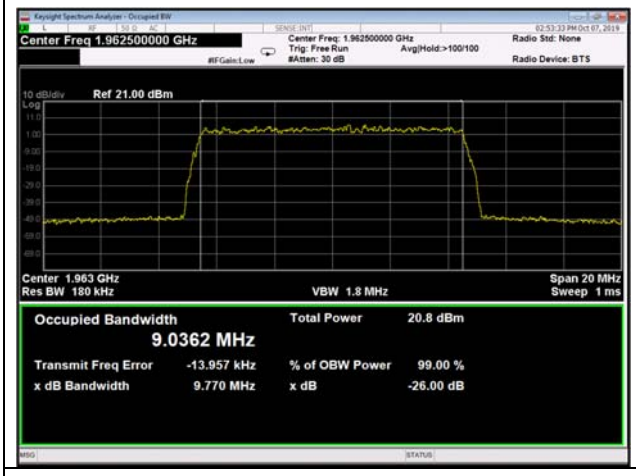

Figure 94 10MHz BW, 1962.5MHz

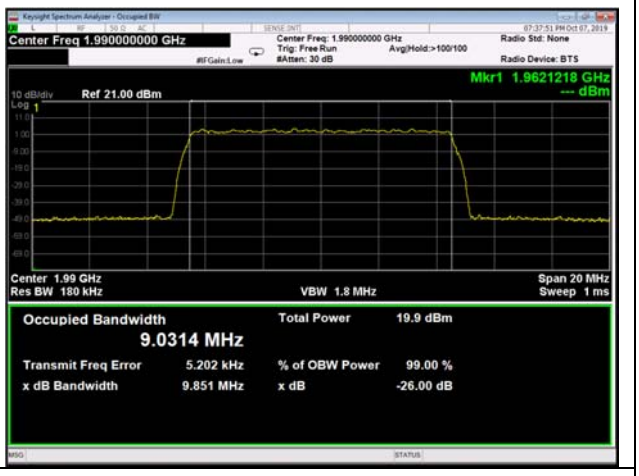

Figure 95 10MHz BW, 1990MHz

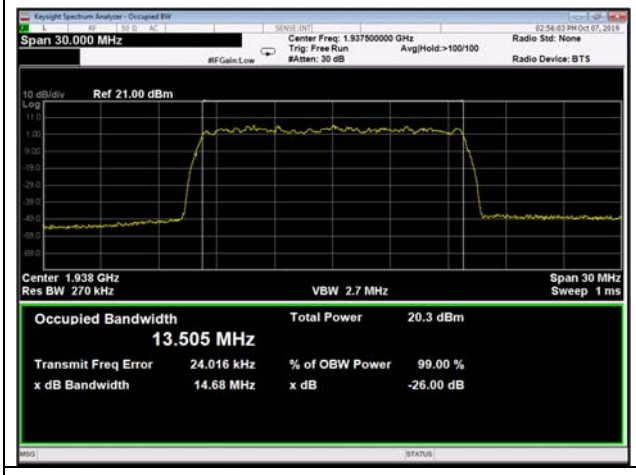

Figure 96 15MHz BW, 1937.5MHz

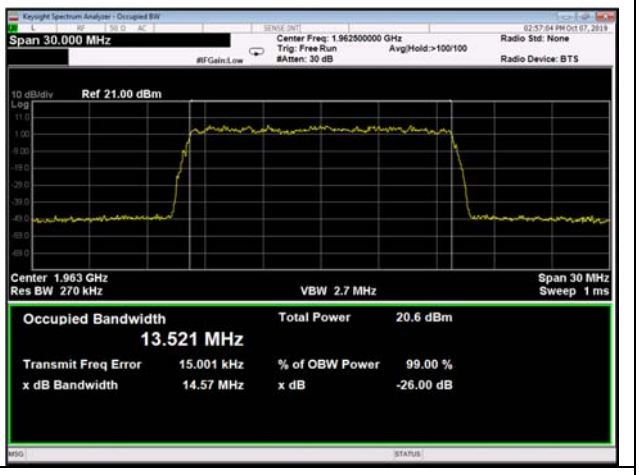

Figure 97 15MHz BW, 1962.5MHz

Antenna PORT	1
Modulation	64QAM

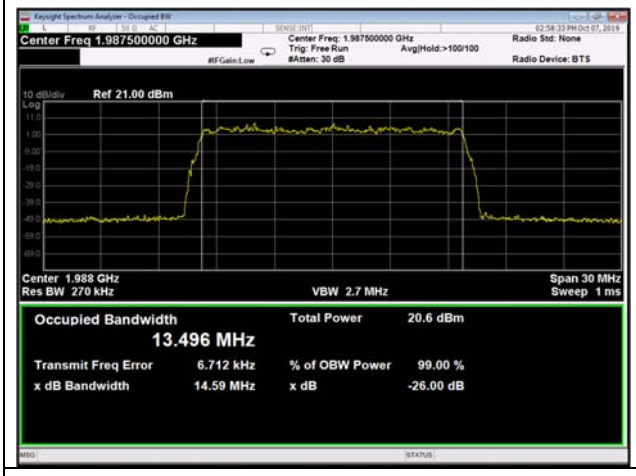

Figure 98 15MHz BW, 1987.5MHz

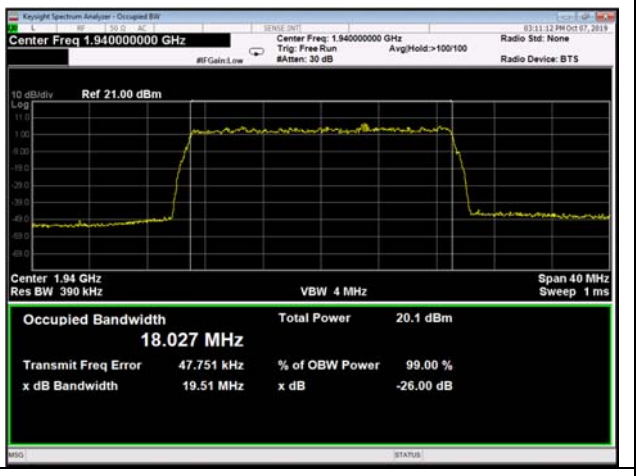

Figure 99 20MHz BW, 1940MHz

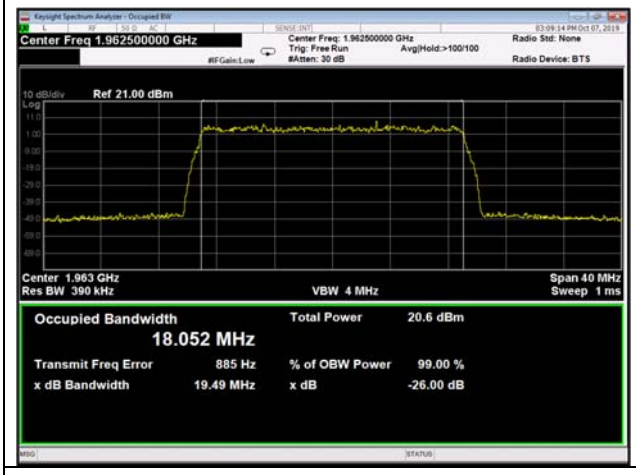

Figure 100 20MHz BW, 1962.5MHz

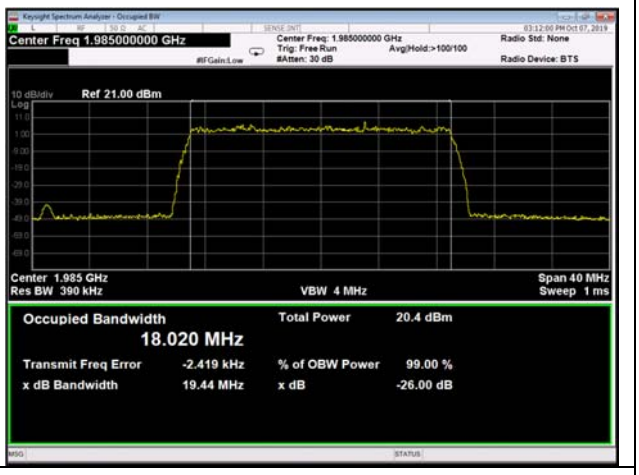

Figure 101 20MHz BW, 1985MHz

Antenna PORT	1
Modulation	16QAM

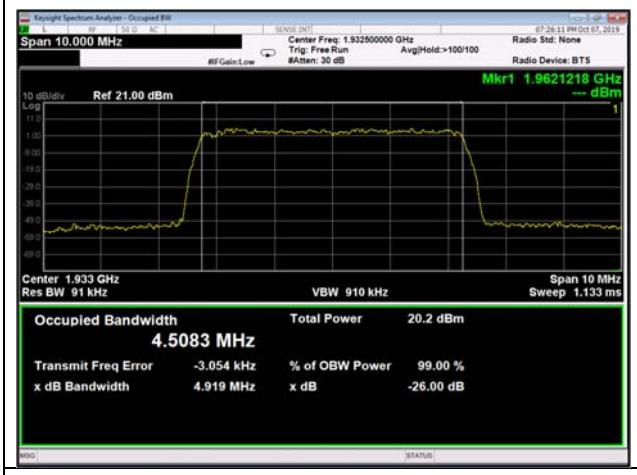

Figure 102 5MHz BW, 1932.5MHz

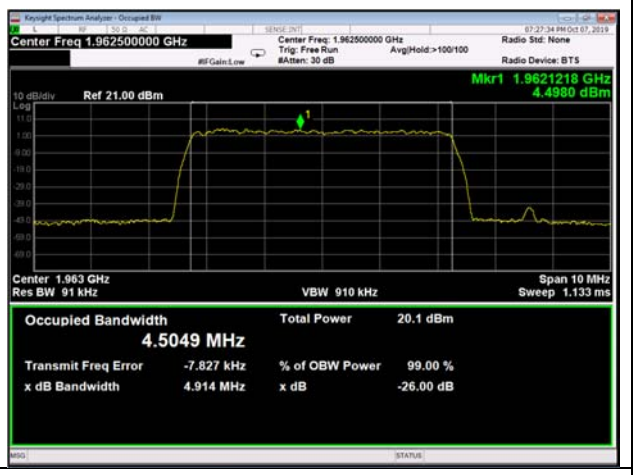

Figure 103 5MHz BW, 1962.5MHz

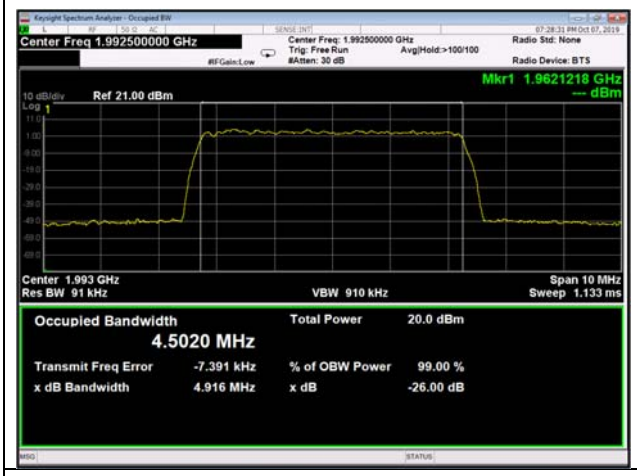

Figure 104 5MHz BW, 1992.5MHz

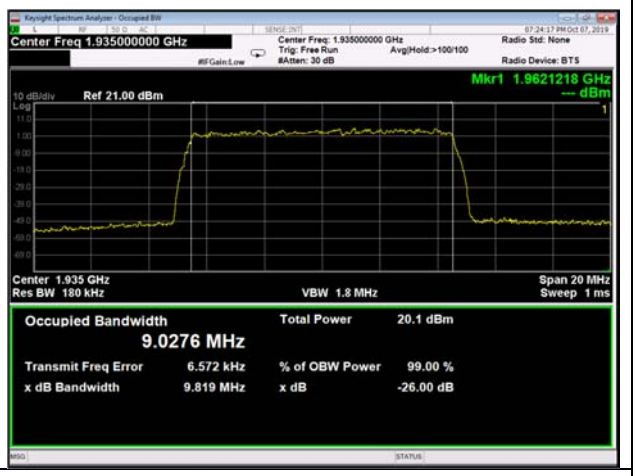

Figure 105 10MHz BW, 1935MHZ

Antenna PORT	1
Modulation	16QAM

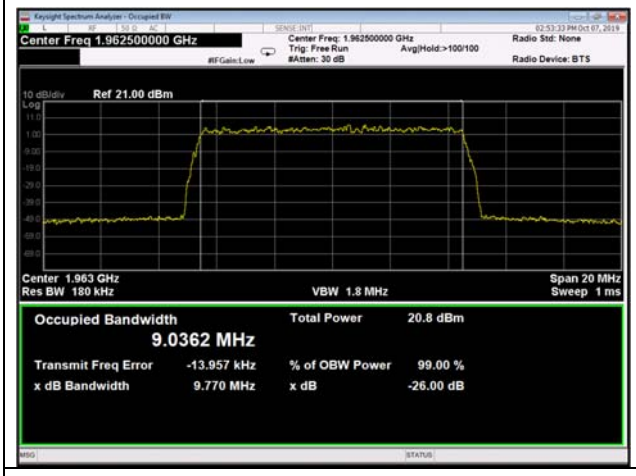

Figure 106 10MHz BW, 1962.5MHz

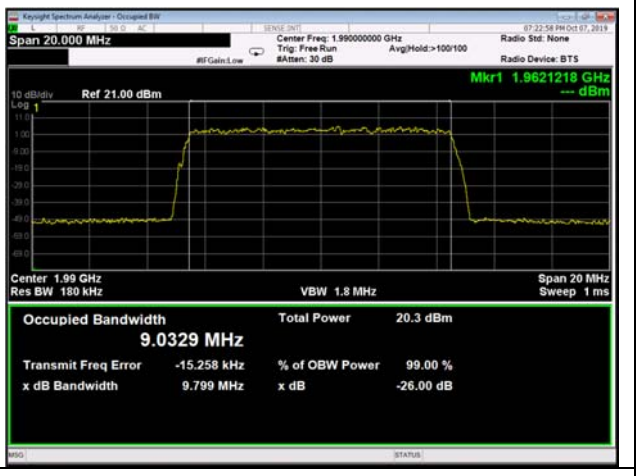

Figure 107 10MHz BW, 1990MHz

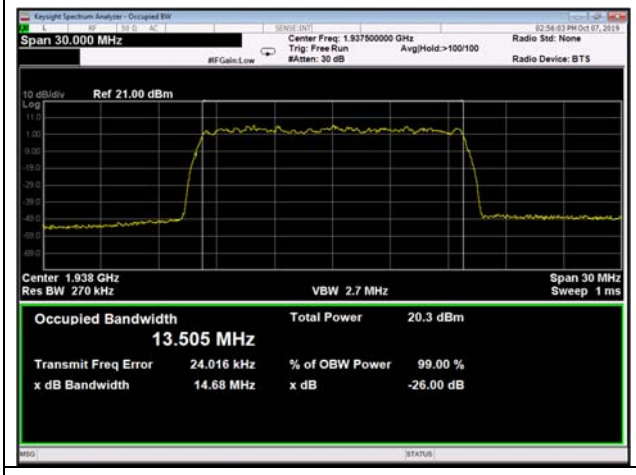

Figure 108 15MHz BW, 1937.5MHz

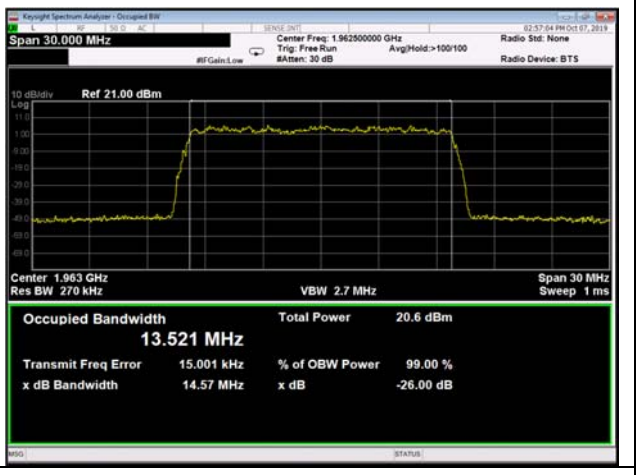

Figure 109 15MHz BW, 1962.5MHz

Antenna PORT	1
Modulation	16QAM

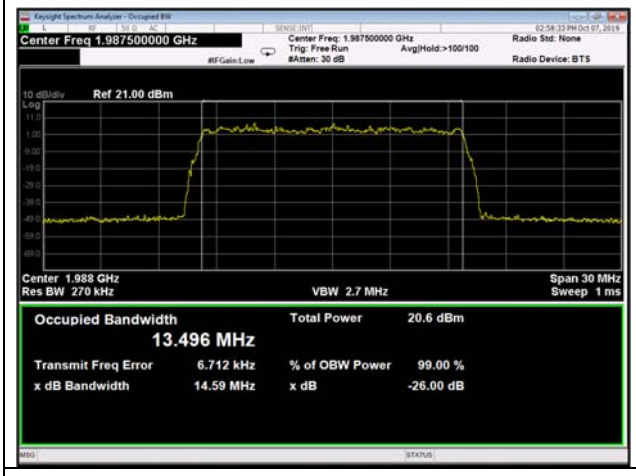

Figure 110 15MHz BW, 1987.5MHz

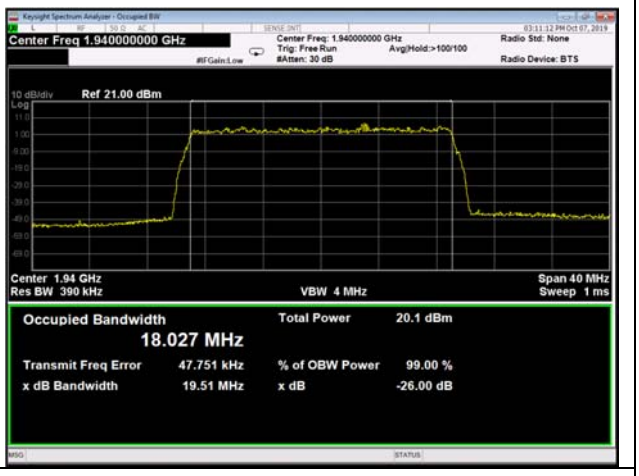

Figure 111 20MHz BW, 1940MHz

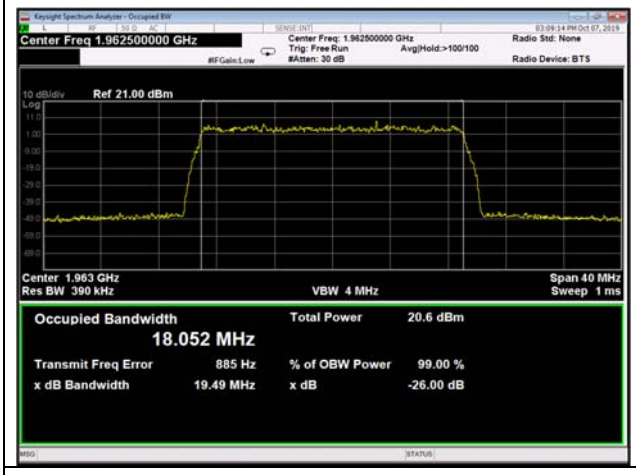

Figure 112 20MHz BW, 1962.5MHz

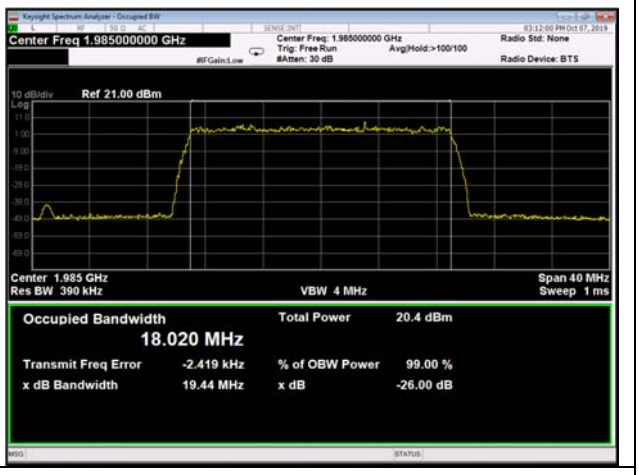

Figure 113 20MHz BW, 1985MHz

Antenna PORT	1
Modulation	QPSK

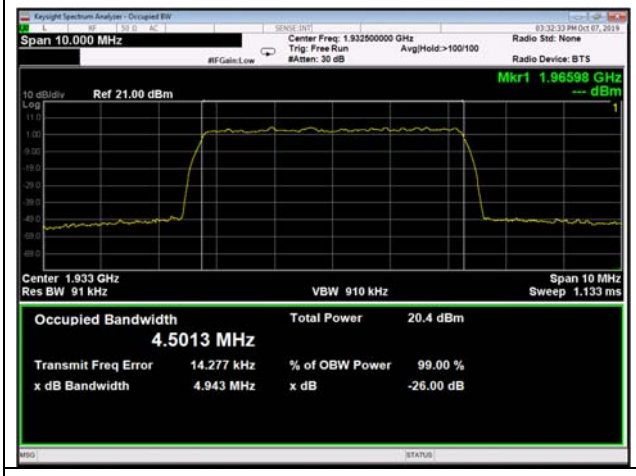

Figure 114 5MHz BW, 1932.5MHz

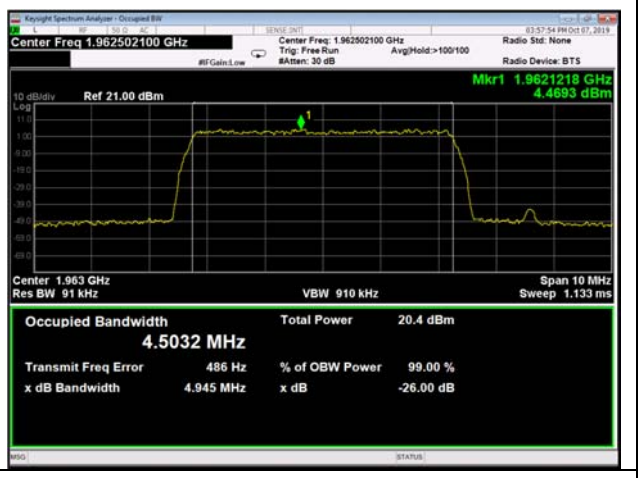

Figure 115 5MHz BW, 1962.5MHz

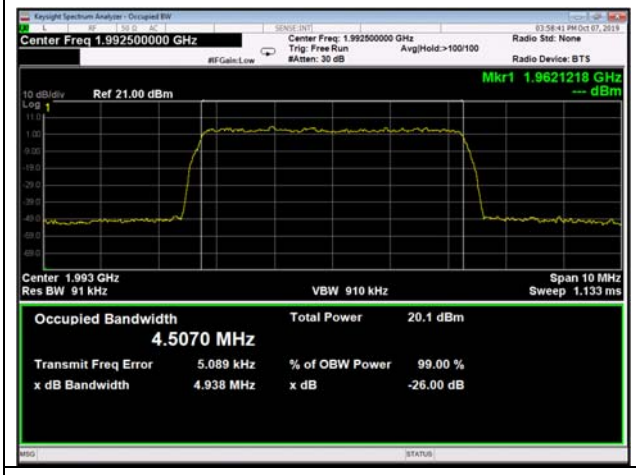

Figure 116 5MHz BW, 1992.5MHz

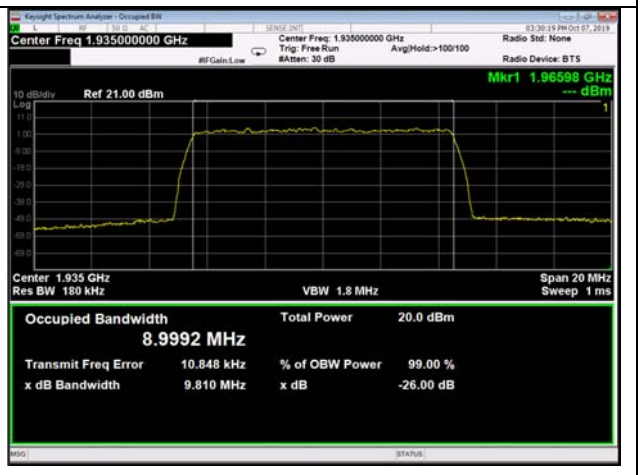

Figure 117 10MHz BW, 1935MHZ

Antenna PORT	1
Modulation	QPSK

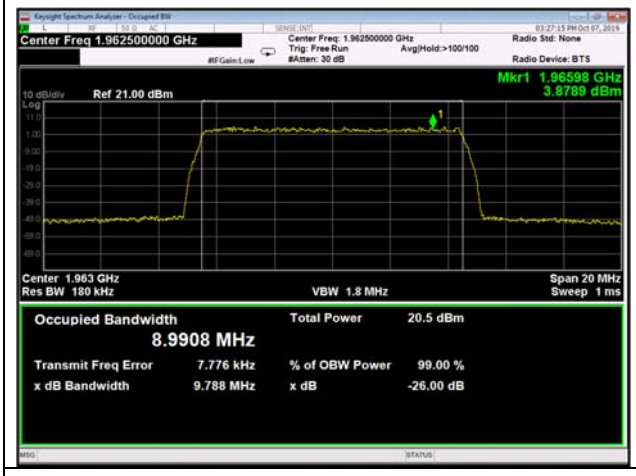

Figure 118 10MHz BW, 1962.5MHz

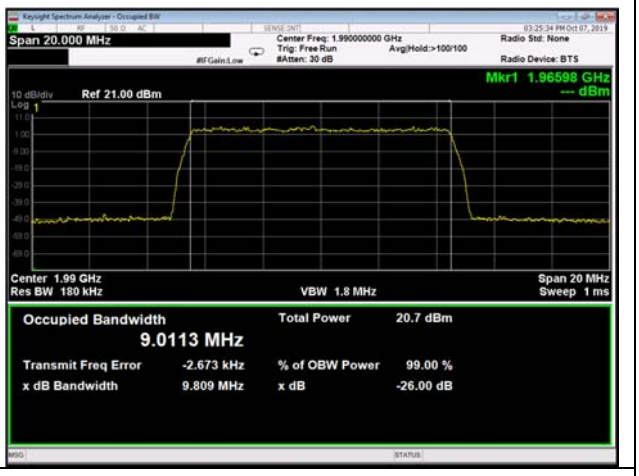

Figure 119 10MHz BW, 1990MHz

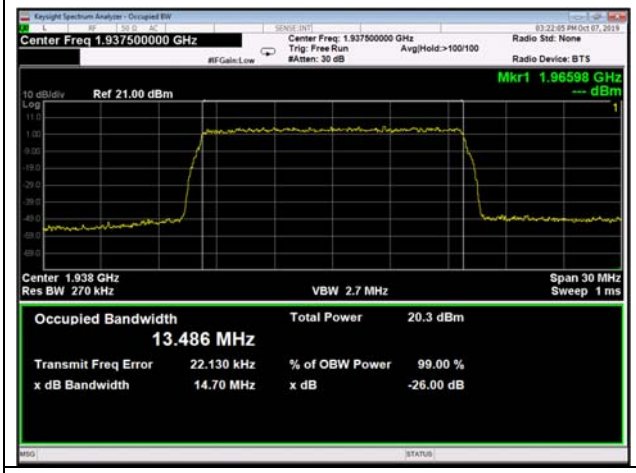

Figure 120 15MHz BW, 1937.5MHz

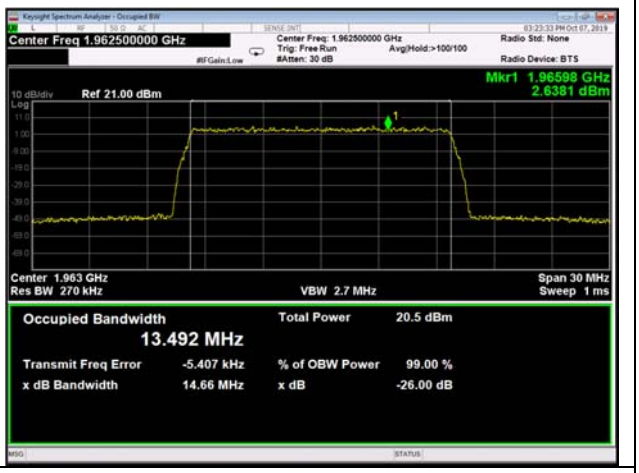

Figure 121 15MHz BW, 1962.5MHz

Antenna PORT	1
Modulation	QPSK

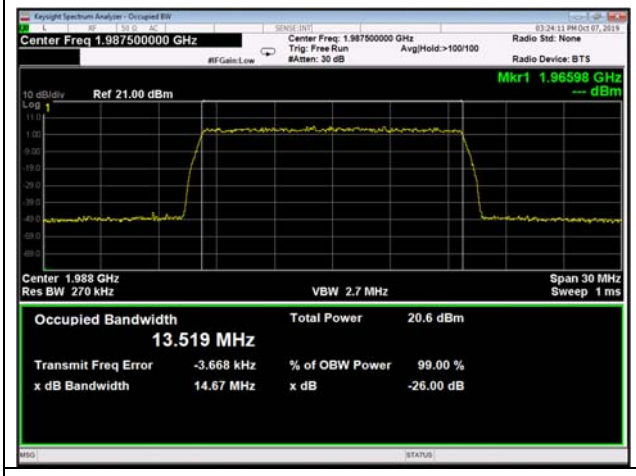

Figure 122 15MHz BW, 1987.5MHz

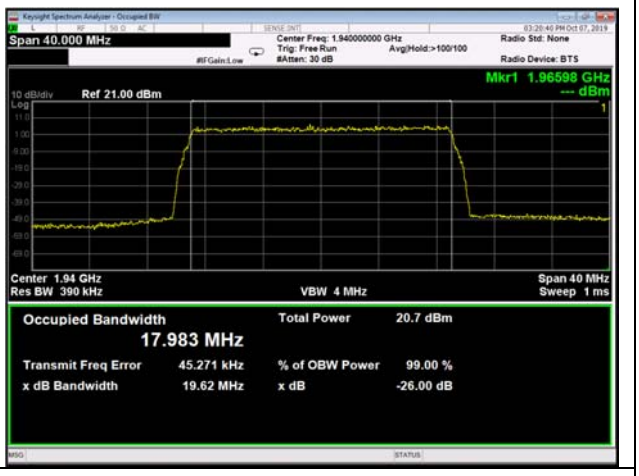

Figure 123 20MHz BW, 1940MHz

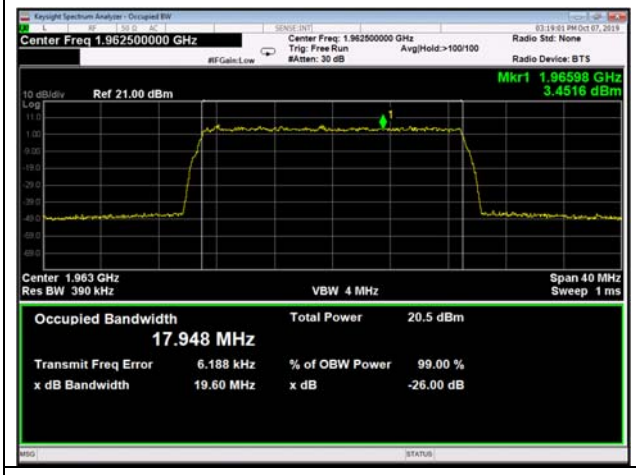

Figure 124 20MHz BW, 1962.5MHz

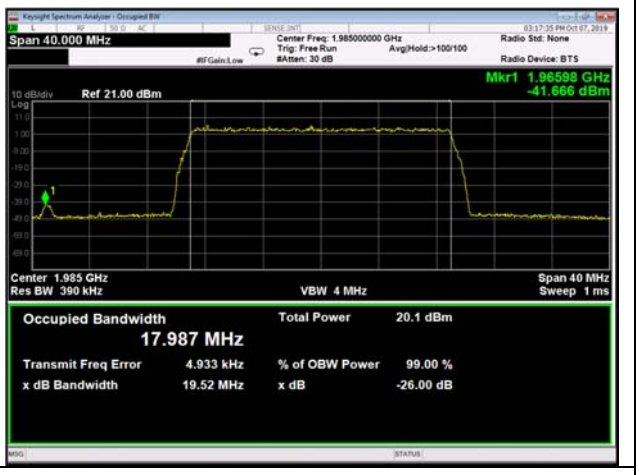

Figure 125 20MHz BW, 1985MHz

5.5 Test Equipment Used; Occupied Bandwidth

Instrument	Manufacturer	Model	Serial Number	Calibration	
				Last Calibration Date	Next Calibration Due
Spectrum Analyzer	Agilent	N9010A	MY52220686	November 28, 2018	November 28, 2020
Vector Signal Generator	VIAVI	MTS 5800	WMNK00716 90263	July 1, 2018	July 1, 2021

Table 1 Test Equipment Used